

HAWAII COUNTY IN 1982

A Report by the Research Division

September, 1982

In 1982 the economy of Hawaii County reached the point that what lies ahead will likely result in a major shifting and changing of the island's economic base. Some changes are being forced on the county because of declining economic conditions that have impacted certain areas. But at no time since World War II have the county's fortunes been at such a low ebb with all of its major industries in simultaneous decline. Some of the industries will not return to their former standing from this abyss—like sugar and the Hilo visitor destination area—and restructuring is in progress.

The County Administration is promoting other options to add to the economic base, but opposition in the community may slow down or stop some of the proposals. Nevertheless, the way many island residents will make their livelihood in the next couple of decades is definitely in the process of change.

The three-year decline in tourism in Hawaii County was halted this year. Visitor arrivals have begun to turn around, but most of the hotels are still suffering from low occupancy rates, especially in Hilo where the industry has been devastated. Hilo as a major destination area is doomed, but tourism will grow and thrive along the leeward coast of the island and maintain its top position in the county economy.

The steep decline in tourism has slashed into the volume of construction on the island, and were it not for public works projects, the construction industry would be practically dormant. The value of private residential permits dropped by almost one-third in 1981 to \$73.8 million, and for the first seven months of 1982 declined a further 10.6 percent. The value of private nonresidential permits jumped 66.6 percent in 1981, but dropped 83.1 percent through July of 1982. The value of public works contracts awarded increased 13.7 percent in 1981 to \$48.4 million. For the first seven months of this year, the total value has increased another 35.5 percent as State-funded projects more than doubled in that period.

Sugar, a mainstay of the island economy for over a century, suffered a huge loss last year from extremely low prices caused by a big world oversupply of this commodity. As a result, one plantation is closing down because it sees no hope of improving its high-cost operation. Another has started to trim its sugarcane acreage, and a third was having a study conducted to see if its operation should be reduced to increase efficiency and cut cost. The reduction in size of the industry will be considerable, but the island's sugar industry will end up as a more productive entity which might be able to stay in business if the federal government protects the American sugar industry from the dumping of world surplus sugar.

Anthurium sales grew steadily for more than a decade, but took a sharp drop last year when production problems and the collapse of the major European market struck at once. This may be a blessing in disguise because this first real setback has forced those in the business to work together to develop new markets and get behind a common effort in promoting this unique blossom.

Macadamia nut production also grew rapidly over the past decade, but production was flat last year. This was not unfortunate because there was an oversupply which the industry was trying to whittle down before the harvesting of the new crop began. Maca-

damia nut and candy sales, like the rest of the economy, have felt the sting of the decline in visitor spending.

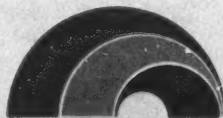
The County Administration is pushing for the development of geothermal power, processing of manganese nodules on the island, and location of a space satellite launching pad near South Point as new economic endeavors that will generate many new jobs in the next decade or two. However, there is strong organized opposition based on alleged environmental pollution, alleged health hazards, and other reasons. The Administration feels that the development of geothermal energy is crucial to the economic future of the county, and claims that the majority of residents favor this project.

Space Services, Inc. of Houston, Texas, has been negotiating for 10 acres of land near South Point for a satellite launching facility. This is regarded as an ideal site because satellites can be launched into equatorial or polar orbits with no land mass or populated areas downrange for 4,000 miles. The pad must be ready by the second quarter of 1984 or the company will seek an alternate site. Once the facility is in normal operation, the company will provide 80 positions including part-time jobs. This operation could pump approximately \$6 million into the county economy annually. The facility needs the approval of the Federal Aviation Administration before operations can begin.

The knowledge industry is another area of future potential being cultivated by the Administration. Astronomy will be the major sector of this endeavor, and the Mayor sees this relatively clean industry expanding to major proportions in this decade and the next. There are six telescopes on Mauna Kea's scientific preserve now, four of them major instruments. Three more have been proposed, two of which will begin construction next year. A fourth may also be built at this site, and that is the prestigious National New Technology Telescope (NNTT) which would be incredibly large.

Construction of the California Institute of Technology's 10-meter (400-inch) telescope and the United Kingdom/Netherlands \$15 million millimeter-wave telescope is expected to begin next year. Both will be used to study the formation of stars. The University of California has decided to build its 400-inch telescope on Mauna Kea after determining this to be the best site. It will cost \$50 million and will be the largest in the world. Funding is being sought, and construction could begin in the mid-'80s at the earliest. But the biggest prize is the NNTT which will cost \$100 million to build and \$10 million annually to operate and maintain, and which will employ 50 persons. This optical telescope would be ten times more powerful than anything on earth today. Its lens will be 15 meters or 591 inches in diameter, made up of a cluster of mirrors. The competition is between Mt. Graham in Arizona and Mauna Kea, and the National Science Foundation will make the final choice, several years hence, and submit its recommendation to Congress. The University of Hawaii Institute of Astronomy is asking Hawaii County and the State for support in convincing the nation's scientific community that Mauna Kea is the best site.

The six telescopes already in operation give Mauna Kea the largest observing power of all existing observatories, and the four



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proposed instruments would put Mauna Kea in a class by itself, if it isn't already. The steady flow of scientists coming to Mauna Kea would make the Big Island a foremost scientific community with significant economic benefits.

But as mentioned earlier, the economy is in decline, and the indicator that best describes this is unemployment. The rate jumped to 11.3 percent in July and the average for the first seven months was 9.5 percent, which is approaching the high of 10 percent average reached in 1978. Employment is down in practically all industries. The exceptions are hotel employment which was up slightly over July 1981 due to further staffing at the Sheraton Waikoloa Hotel which opened up in July 1981, federal and state government employment, and employment in diversified agriculture.

TOURISM

The severe recession in tourism in Hawaii County is beginning to bottom out. Visitor travel through July was up 2.5 percent and visitor industry officials on the island are generally encouraged about prospects for 1983. This has been the worst decline by far that tourism has experienced on the Big Island since the industry began its long steady climb following World War II to become the county's biggest basic industry. Visitor arrivals peaked at 909,000 in 1978, and the Big Island had visions of its first million-visitor year in 1979. However, sharp oil price increases by OPEC resulted in big hikes in air fares, and the beginning of the national economic recession darkened the picture considerably. Visitor arrivals for Hawaii County fell 5.3 percent in 1979, 11.6 percent in 1980, and 14.8 percent in 1981 as the total visitor figure tumbled to 648,382, a volume that was reached way back in 1972.

Occupancy figures also dropped sharply during this period, resulting in a tight squeeze on profits and losses for many operators. From a peak of 65 percent occupancy for Hawaii County hotels in 1978, the figure slid to 62 percent occupancy in 1979, 52.7 percent in 1980, and 44.9 percent in 1981. Aggravating the situation was the annual increase in the number of hotel rooms, going from 6,064 in 1978 to 7,219 through June of this year. Hopefully, through the stepped-up promotion by the County Administration in cooperation with the State and the Hawaii Visitors Bureau, occupancy rates will begin to turn around before long. The average occupancy for the first seven months of this year was 44.2 percent, the same low occupancy figure as was recorded in the first seven months of last year. While promotional efforts in the past have been aimed at travel agents through trade publications, the extra effort this year leans heavily toward consumer advertising on radio and TV. The County has had success with travel writers, and this program will continue. Travel writers detailing the various things that can be enjoyed there from skiing to fishing will help the County advance the new theme of the Big Island being the island of action.

The good news is the 2.5 percent upturn in visitors in the first half of 1982. Part of the upturn has resulted from competitive fares with the reentry of American Airlines into the Hawaii market. Then Pacific East Air inaugurated its \$99 fare between Los Angeles and Honolulu on June 14, and Hawaii Express started similar flights on August 25. The daily United Airlines flight between Los Angeles and Hilo has been running at capacity both ways in June, apparently due to the lower fares. But the schedule is down to only a flight a day unlike in previous years. And interisland flights have been reduced also, due to the sharp decline in arrivals to the Big Island over the past three years. So during this turnaround period, the Big Island is hampered in the recovery of tourism by lower seat capacity as well as the higher cost of interisland travel relative to the other islands. Interisland fares to the Big Island have traditionally been higher since the Big Island is farther from Honolulu than either Maui or Kauai. The entry of a third major interisland airline into the Honolulu-Big Island market later this year may have some downward effect on fares.

If the heavy promotion and lower fares to Honolulu bring more visitors to the Big Island, the airlines will then schedule more

flights. But the return of better fortune may be too late for Hilo. The situation in Hilo has deteriorated to such a degree during this long decline that investors have given up hope of developing the city into a major visitor destination area. With occupancy rates having lingered below break-even levels for a considerable time, some Hilo hotels have closed and others are removing hotel rooms from the market. Quality Inn-Hilo Lagoon is planning to convert the hotel into an office condominium building. Owners of the Sheraton Waiakea Village Hotel will convert 160 of the 294 rooms into office space. They also own the Volcano House and filed for Chapter 11 reorganization in Federal Bankruptcy Court last spring. The Naniloa Surf Hotel has been on the sales block. However, the new owner of the Orchid Isle Hotel has plans to renovate and reopen this hotel which has been closed for several years. Astutia Trade and Development Corp., consultant to the Japanese company that purchased the property, is trying to determine the work required and the cost involved in bringing the 110-room hotel back to life. The consultant estimates that it will take about a year to get the building ready for business.

A consensus has finally developed on the Big Island that visitor destination areas should be concentrated along the west shore of the island. Mayor Matayoshi puts the County Administration back of this concept of developing a strong visitor plant where it is apt to take root more vigorously and secondary areas such as Hilo will not be left out but will benefit from the spinoff anyway.

But West Hawaii has not done too well itself in the recession years of 1981 and so far in 1982. Kona hotels registered occupancy of 49.5 percent for all of 1981, but for the first seven months of 1982, the average occupancy was down to 47.2 percent, even though the number of hotel rooms remained about the same. The Kohala Coast saw the opening of the 543-room Sheraton Royal Waikoloa Hotel at midyear 1981. This pulled down the occupancy rate for that destination, but the new hotel at first did as well as it had expected. However, the past winter was not as good as Sheraton had projected.

Most operators agree that 1983 will be a better year, building upon the turnaround which they expect to begin this year. Seven-month visitor arrival figures for the Big Island show some improvement, and the second half should see that trend continue with the ongoing promotion and continued low transpacific fares.

After all the years of promoting the Big Island, local officials of the industry are frustrated that potential visitors still don't know where the island is or what it has to offer. The Hawaii Visitors Bureau, County Administration, industry associations, and individual hotels have concentrated their efforts in resolving this problem, but the confusion exists. The County wants to advance the new theme of Hawaii being the island of action where any recreational activity is only half an hour away. The hotels in South Kohala are beginning to tout their area as the Kohala Coast. Kona has just begun to use the phrase "The Sunniest Coast in the State of Hawaii." Nicholas Enns, president of Cambridge Pacific Inc., operators of Kona Village, suggested the slogan as a means of identifying West Hawaii in the minds of people on the Mainland. By letting potential visitors make an effort in finding out where the sunniest coast is would help them remember the Big Island. And selling sun is the right pitch because that's what they all want, Enns says. *West Hawaii Today* has incorporated that slogan in its masthead and some companies are using it on their letterheads. But there may be some confusion because Kauai's Poipu resort is using the slogan "The Sunniest Hawaiian Beach Resort of Them All."

Despite the slump, development of destination resorts in West Hawaii continues, particularly in South Kohala. The Sheraton Royal Waikoloa Hotel opened in July 1981, when tourism on the island was scraping bottom. Under these worst of conditions, business thus far this year has not been satisfactory, but the hotel sees an improvement in 1983, with incentive groups and conferences adding to its occupancy. With 543 rooms and suites, the hotel has a staff of 400 full- and part-time employees.

Transcontinental Development Co., which owns the 500-acre resort parcel, has two projects completed: the golf course, which it operates, and the Sheraton. It is working on plans for a second hotel, but start-up is at least a year away. So is the first condomin-

ium apartment project, which will be delayed due to high money costs.

The next hotel that will open on the Kohala Coast will be the Mauna Lani Bay Hotel, the 351-room luxury hotel which will be the flagship of the 3,200-acre Mauna Lani Resort, located between the Mauna Kea Beach Hotel to the north and the Waikoloa Beach Resort to the south. Originally scheduled to open in December, the inaugural will be delayed to the early part of next year. The championship golf course has been in play for more than a year. The hotel will have a 4,800 square-foot ballroom for meetings and conferences, and will be divisible into four smaller function rooms. There are three other meeting rooms of 600 square feet each, and a luau area beside the ocean for outdoor meetings for groups up to 500. Site work for the condominium has started. The 80 one-, two-, and three-bedroom units will be contained in 11 clustered buildings. Prices will range from \$275,000 to \$895,000 each, and the project is scheduled for completion in late 1983.

Up the coast at the Mauna Kea Resort, work has begun on the Fairways at Mauna Kea North, a project of 32 leasehold single-family residential lots located on the Kawaihae side of the entry to this famous destination. Each lot will be a half acre or larger in size, and the average price is \$350,000. Nevertheless, the developer reports a lot of interest in the lots. In the design stage is the condominium project, Villas at Mauna Kea, which will have 40 single-story luxury condominium villas on 32 acres with a view on the south side of the entry to the resort. These leasehold units will be of two and four bedrooms with floor space ranging from 2,750 to 3,500 square feet. Ground breaking is scheduled toward the end of the year.

In Kona, where construction is almost at a standstill, development activity should start again late this year when work begins on the 480-acre next phase of Kamehameha Investment Corporation's Keauhou-Kona resort. The 500-acre first phase is mostly completed except for 25 acres on which a hotel and a condominium are planned, and a few other parcels. The developer has asked the County Planning Commission for a higher density for the hotel at the head of Keauhou Bay and reduced density for the condominium that will adjoin the hotel property. The hotel will be seven stories in height and contain 400 rooms, with provisions for the addition of 200 rooms later. Plans for the condominium call for 70 units.

Work on the new tract will begin with the construction of a shopping village on 23 acres at Alii Highway and Kam III Road. The multi-building center will have 73,000 square feet under roof and will cost \$7 million. There will be some office space but the center will be anchored by a grocery chain. Plans call for the addition of another 72,000 square feet of space when demand warrants. The shopping village will employ 137 full- and part-time employees when all the stores open late next year or early 1984. A second 18-hole championship golf course is planned, with construction to begin next spring, including a new clubhouse. Around the perimeter of the course will be 126 acres that will be developed into half-acre house lots. Rezoning will be required for both the golf course and the house lots.

With the completion this year of Kona Surf Hotel's big convention center, the potential for attracting large conventions and incentive tour groups to Kona has been enhanced. The main meeting room has 10,000 square feet of floor space which can be divided into smaller areas, each with its own sound and lighting controls. The 9,200-square-foot reception-cocktail area can seat a thousand for banquets. With conference facilities already existing, Kona Surf can hold 12 meetings simultaneously. The hotel is promoting the new center aggressively on the Mainland.

Between the Kona and the South Kohala resorts lies the Kona Village resort. This is the one resort that has had increasing profitability the past three years when tourism was retrenching on the island. The 95-room Village has 160 acres still undeveloped, but Cambridge Pacific Inc., the parent firm, has decided to preserve that resort as is. Instead, it has asked the County to transfer the urban intermediate resort zoning to 65 acres located one and a half miles to the north and change the acreage around the Village to conservation. Then the company would like to build a 350-room

hotel on the 65 acres, and eventually put in an adjoining golf course. It also plans to develop 30 acres three-fourths of a mile south of the Village into 50 house lots. A just-completed well will be capable of providing high quality water to this entire development without depending on County sources.

RENEWABLE ENERGY

Hawaii County's drive to make itself as energy self-sufficient as possible has made significant progress the past several years with the growing volume of biomass fuel generated power. Up to last year, the sugar plantations were providing more than one-third of the power requirements of Hawaii Electric Light Co. Geothermal and OTEC power were expected to add to the volume of renewable energy so that it would provide most of the island's power needs during this decade.

But all of a sudden, the prospects for electric power self-sufficiency have turned bleak and what seemed like an attainable goal at one time has been set back indefinitely.

The huge loss suffered by the sugar industry last year brought about a reassessment of its economic viability. The result is that one plantation has decided to close, another will take 8,000 acres out of sugar over the rest of the decade, and a third is studying the possibility of curtailing its operations. One of them will not supply any power after 1984, and a second will gradually reduce the amount of power it exports. The third will have to curtail power export also if it decides to cut its field acreage, and it is not supplying much power now because a turbine in its new generating plant broke down and will take a year to repair.

Reduced sugarcane acreage will cut down the amount of biomass fuel available, but a study now being conducted by C. Brewer and Company, Ltd., shows that fast-growing trees may be an alternate source of biomass fuel. Financed by the U.S. Department of Energy, the study so far appears very positive. The first eucalyptus trees planted are now about three and a half years old, and some are over 50 feet tall, with trunks five inches in diameter. The study expected a growth of a foot per month, but that is being exceeded. The objective was to produce 120 green tons per acre in six years, but that goal may be reached in three and a half to four years under the kind of favorable conditions that have been experienced so far. Early economic evaluation by the U.S. Forest Service showed a preliminary return on investment of 26 percent on abandoned cane land as there is no clearing cost, 18 percent on wasteland, and 10 percent on forestland where a lot of clearing is required before planting.

On the geothermal energy front, the 3-megawatt generating plant south of Pahoa fueled by the HGP-A well has been functioning satisfactorily after a shutdown last year for repairs. Its normal output is 24 million kilowatt hours a year which is sufficient to supply between 2,000 and 3,000 homes, according to Hawaii Electric Light Co.

Puna Geothermal Joint Venture and Barnwell Industries have both completed the drilling of two wells, which were being tested. The third private sector group that is interested in developing this resource, the True Mid-Pacific Geothermal Venture, is in the process of obtaining State approval so it can begin drilling on a small plot of Campbell Estate land on the upper rift zone not far from Kilauea Volcano. Campbell Estate, which is seeking the approval since it owns the land, has met with a lot of vocal opposition to geothermal development. The County, which commissioned an opinion poll last spring, said most of the area residents approved of geothermal development and only 21 percent were opposed. Chamber of Commerce groups and other business organizations have also come out in favor of these projects.

Campbell Estate's conservation district use application was filed last April with the Department of Land and Natural Resources. By the end of July the board had approved the estate's environmental impact statement. In the first phase the venture partners want to drill eight wells and build two generating plants of 12.5 megawatts each. Other components that will make this a fully functional entity plus a transmission system will bring the total cost to between \$44 million and \$65 million.

All three ventures are interested in supplying Hawaii Electric Light Co. with the 25 megawatts of capacity it will need by 1987. HELCO will have to decide by 1984 which of the three will get the supply contract.

If for any reason, opposition or otherwise, geothermal energy development is delayed, HELCO will be adversely affected. A year or so ago, it appeared that HELCO had built its last fossil fuel generating plant with renewable energy projects making timely progress. All of a sudden, retrogression has set in. As already noted, the supply of surplus electric power from the sugar industry will decrease, and if geothermal doesn't meet its schedule, HELCO will have no choice but to build more conventional generating plants. HELCO has the lowest electric rates in the state, but it won't have for long. It is forecasting a 3.5 percent growth in demand in the year ahead, and with the loss of supply from the plantations, it will have to use its inefficient diesel units to make up the shortage, and may likely have to build a new diesel generator to get over the hump.

The OTEC (ocean thermal energy conversion) process was demonstrated as viable by Mini-OTEC off Keahole Point in August 1979, and energy generation by this method looked promising for Hawaiian waters. However, the Reagan Administration has reduced funding for Department of Energy projects, and OTEC was one of the victims. However, some OTEC research based in Hawaii is still alive. Work is continuing on the offshore and on-shore OTEC pilot plants at Kahe on Oahu. The three-phase testing of cold water pipe for OTEC is being done by Hawaiian Dredging and Construction Co. Finally, the cold water pipe will be towed to Keahole Point to test installation techniques.

The Natural Energy Laboratory of Hawaii at Keahole Point and its Seacoast Test Facility is continuing to study biofouling and corrosion rates for pipes made of different alloys and ways to counteract them. The facility is also conducting research on cold-water aquaculture. Its work so far includes cultures of Japanese-type seaweed, rainbow trout, and salmon. Federal agencies are funding the research on OTEC and the State is paying for the work on aquaculture.

AGRICULTURE

Agriculture has always been a major sector of Hawaii County's economy, and it has been a good provider. But 1981 was definitely an off year for this important industry, and a turning point for the sugar industry which was devastated by extremely low prices. The total farm value of crops and livestock produced last year in the county totaled \$162.9 million, a 24.4 percent drop from the record \$215.6 million in receipts in 1980. The cause of this decline was the 45 percent drop in the value of sugarcane harvested, resulting in millions of dollars of losses for the sugar industry.

All major diversified crops showed increases in receipts, ranging from 3.4 percent for flowers and nursery products to 94.4 percent for coffee, which is making a comeback. Livestock marketings held relatively steady with a 2.6 percent increase overall to \$23.1 million.

Sugar

The cost of production that escalated in the past couple of years and a big oversupply caused by subsidized foreign production brought on a crisis for the sugar industry of Hawaii and the nation in 1981. The oversupply toppled world sugar prices to levels far below the cost of production for Hawaii producers, who lost \$83.5 million last year. Revenues from sugar and molasses amounted to only \$325 million in 1981, compared with \$631 million in 1980. World prices have sunk much lower this year, to the 7-cents-a-pound level, but inclusion of sugar in the Farm Act by Congress last year has brought some relief. The law resulted in a floor price of 17.5 cents a pound for sugar this year, but that was still below production costs. The Federal Administration then imposed import quotas in May, and this action has raised domestic sugar prices to the break-even area.

The low prices of 1981 resulted in a 45.0 percent reduction in revenues for the sugar plantations on the Big Island—from \$216.6 million in 1980 to \$119 million. This crisis resulted in the announcement that Puna Sugar Co. will be closed when its final crop is harvested in mid-1984. Mauna Kea Sugar Co. announced it will take 8,000 acres out of sugar and shift to macadamia nut production. Davies Hamakua Sugar Co. was having a study made of its operations, and one of the options being looked into is the closing of its Ookaia factory, which would leave only its Haina factory. The decision will be made after the study is completed later this year, but if the mill is closed the acreage will have to be reduced because of inadequate milling capacity.

These cutbacks, if implemented, will take all of this decade to complete, and would cut the Big Island's sugarcane acreage from 91,000 today to something below 65,000 acres. This would be a substantial reduction but the smaller entity would be a more productive and efficient industry for the island. Hawaii would still remain the largest sugar producer of any island in the state.

A big casualty of this reduction in size is power generation using biomass fuel. Puna Sugar, Hilo Coast Processing Co., and Davies Hamakua Sugar had all upgraded their boilers and increased their power generating capacity over the past several years costing millions of dollars of investment. Puna Sugar has given Hawaii Electric Light Co. three years notice as required that it will not be able to supply the power it had contracted to sell because of its liquidation. The Hilo Coast Processing Co. has also given Hawaii Electric Light 24-month notice that its power delivery will be reduced annually as sugarcane acreage is converted to macadamia nuts. At Davies Hamakua, the new generator was working fine until one of the turbines broke down. It will take a year to repair, and power generation has dropped by about 50 percent.

There's a brighter story at Ka'u Sugar Co., where a new sugar mill costing \$3.2 million was dedicated in July at Pahala. It replaced the mill that was built in 1906, but which was still good enough to achieve production records in both 1980 and 1981.

Hilo Coast Processing Co. has had a good production year so far despite the rain, and it may end up with a record yield this year. The record is 11.33 tons of sugar per acre established in 1975. Ironically, Puna Sugar is also operating at extremely high efficiency and may achieve a record yield. Through June its yield was 10.55 tons of sugar per acre versus the prior record of 9.9 tons in 1972. On the other hand, Davies Hamakua has been affected by constant rain which diminished sunlight and prevented ripening. Normally it takes Davies Hamakua 8.5 tons of cane to make a ton of sugar, but for the first half of this year it has taken 11.06 tons of cane.

Flowers and Nursery Products

Flowers and nursery products (except for anthuriums) showed tremendous increases in production and marketing in 1981 in Hawaii County. Anthurium sales, which have grown substantially year after year, suffered a 23.6 percent decline in 1981 to \$5 million, the first drop since records were started in 1970. The Big Island, which still ships more than 95 percent of total state exports of anthuriums, encountered the collapse of its biggest market—Europe—last year as the recession and unfavorable currency exchange rates forced Common Market countries to chop their orders drastically. Shipments to the three major European markets—Italy, West Germany, and Switzerland—were slashed by 32 percent last year to 701,200 dozens. However, shipments to Japan jumped by 42 percent, making it the largest foreign market for the first time. Shipments to Australia maintained the 1980 pace and sales to all other foreign countries more than doubled. This reduced the 1981 decrease in foreign shipments to 12 percent. A further decline is forecast for 1982. Meanwhile, shippers have been cultivating the Mainland market which grew by 9 percent last year, accounting for 29.6 percent of total shipments, up from 25.3 percent in 1980.

Sales of foliage and other potted plants increased by 55.2 percent to \$3.5 million last year, making this an important part of the Big Island floricultural industry. Kohala Nursery, one of the

largest growers and the most successful of the Kohala Task Force-sponsored enterprises, is planning to increase its acreage by 80 acres to 164 acres. It is negotiating with Kohala Corp. to lease more land adjoining its present nursery.

Other large gains made last year were the 47 percent increase in sales of vanda flowers for leis to \$786,000, and a 29 percent increase in sales of potted orchids to \$537,000.

Total flower and nursery product sales last year amounted to \$12.5 million, up 3.4 percent from 1980's \$12.1 million.

The soft market for anthuriums has forced Big Island shippers to work together for the first time. The County and State would provide funds for promotion only if the shippers worked together. They agreed and joined the American Floral Marketing Council, which has proposed a program for advertising the flower. The Council dues paid by the shippers will be considered as fully matching the County and State funds advanced for promotion.

The Hawaii Anthurium Growers Cooperative, whose members account for about a third of total Big Island production, has imposed a quota system for members during the soft market. A fourth of the growers are restricted from harvesting for a week, followed by the next fourth, and so on. In addition to this rotation, quotas were set for members during the low sales periods. The cooperative got some standing orders from Japan that have filled some of the low periods. It expects better conditions in the early fall when the traditional upswing in prices begins, especially in Europe. Italy, for example, begins each fall to reduce duties on flowers to supplement supply as domestic production begins to taper off. Other European nations also begin reducing duties, and quotas imposed by some are dropped at that time. The co-op is looking for a much brighter 1983, partly due to an improved marketing effort by the new shippers' co-op and increased cooperation among shippers and growers.

Coffee

Coffee is making a comeback in Kona because prices received the past two years have been exceptionally good. Acreage has not increased, but good weather plus increased fertilization has produced the best yields in nine years. The 1981-82 harvest produced a crop of 2.24 million pounds and a yield of 1,300 pounds per acre, the best since the 1,500 pounds per acre in fiscal 1973. The value of the crop was \$4.5 million, close to double the 1980-81 sales of \$2.3 million. The average price paid for parchment coffee was \$2 per pound, up from \$1.60 a pound the previous year.

Growers are expecting a comparatively smaller crop for the year that started with initial harvest this month because of heavy rains that prevented a good set during blossom time. The consensus estimate is for a 40 percent drop in production. But the following year's crop is expected to be the best in more than a decade, one indication being the heavy purchase of fertilizer by growers of the Kona Farmers Cooperative.

United Coffee Corp., which handles about 25 percent of the Kona crop, markets coffee as a gourmet item. Part of its sales are to S&W Fine Foods which packs Kona coffee under that brand, and part is shipped to Japan. United also got Kona coffee into the White House. It ships Kona coffee to Germany where the beans are decaffeinated using a water rather than a chemical process.

The Kona Farmers Cooperative handles about 60 percent of the Kona crop. It ships 80 percent of its production to Douwe Egberts Superior Co. and the remainder to Japan. Its problem this year will be to prorate a much smaller crop to these two customers who are expanding their markets for Kona. The cooperative, which burns macadamia nut shells to dry the nuts, will add more burner units to dry most of its coffee production. This will save it \$32,000 annually in fuel costs.

The Pacific Coffee Cooperative, which handles about 15 percent of the crop, sells its production to Douwe Egberts Superior Co. also. Its biggest problem is labor, which is difficult to recruit at rates growers can afford to pay.

Macadamia Nuts

Hawaii's macadamia nut crop, which has been increasing an-

nually since 1973, failed to maintain the pace for the crop year ended last June 30. Production amounted to 33.4 million pounds, 30,000 pounds below the previous year's crop. However, the value of sales totaled \$26.5 million, 9.4 percent more than the \$24.2 million received in 1980, due to higher prices received for the nuts.

The flattening out in yield may be a blessing because for the first time, the industry is facing an oversupply situation. For years the nuts were in short supply, but the market has been temporarily saturated, due to the lack of adequate marketing and the softness in tourism.

Nonetheless the industry is bullish for the long term because the acreage in macadamia nuts could double if announced plans for expansion are carried out. C. Brewer and Company, Ltd., the largest producer in the state, will further dominate the market with its planned expansion. It started a 5,000-acre addition in Ka'u and on Maui in 1979, of which 2,000 acres are already planted. At the end of July, its Mauna Kea Sugar Co. subsidiary dedicated a sugarcane field site on the Hilo Coast that will eventually turn 8,000 acres of cane fields into macadamia nut orchards. About a thousand acres will be planted annually, and by the end of 1987 Brewer's Mauna Loa Macadamia Nut Co. subsidiary will be managing 14,000 acres of macadamia nuts.

Amfac Inc. will get into the macadamia nut growing business with the conversion of 1,100 acres of sugarcane land into nut orchards after its Puna Sugar Co. subsidiary harvests its last crop. It will be a joint venture with a Mainland firm, with Amfac providing the land.

Hawaiian Holiday Macadamia Nut Co. has leased several hundred acres in Kohala which will be planted in macadamia nuts in annual increments. Mac Farms of Hawaii is not planting new acreage but is getting increased annual yields from the maturing of its trees.

Marketing will become increasingly important as local production keeps on growing. The problem will be to keep from being crowded out of markets by expanding foreign production. Hawaii had the market to itself up to now but several countries have production that has reached commercial proportions.

Mauna Loa Macadamia Nut Co. reports success with its new glazed nut products. They are not offered in many places yet, so the company sees a much larger market for this new product. Hawaii and the Mainland are still the major markets for Mauna Loa, but it has started working with the Suntory group to market its products in Japan.

Macadamia nut production is increasing at the Kona Farmers Cooperative, whose major product is still coffee. Many of the farmers have planted macadamia nut trees among the coffee trees, and annual production is now around 1.7 million pounds. The co-op's 10-year contract to supply all of its nuts to Hawaiian Host has expired, and it has turned elsewhere for its marketing expertise. It has signed an agreement with Lindsay International Inc. to market the nuts. The co-op began roasting the nuts in California in August, using the services of a custom roaster and packer. The nuts will be marketed under the "Kona Farms" label in 3.5 ounce jars.

Mac Farms of Hawaii started marketing its nuts in bulk raw kernel form a year ago, mainly to local candy manufacturers. With the softness in the local market, most of its production is being shipped to the Mainland, though it exports some of its nuts through its parent firm in Australia, which also produces the nuts. Mac Farms has reached an agreement with the California Almond Growers Exchange to market the nuts under its Blue Diamond label.

Hawaiian Holiday has been marketing its many products in its own retail outlets in the state and in one store in Hong Kong. But with the decline in tourism, sales have fallen, and it is now marketing some of its nut products through wholesalers.

Papaya

Papaya production on the Big Island in 1981 reached a record 54.5 million pounds, which was 86 percent of total state production of 63.6 million pounds. The total farm value was \$10.2 million for

Hawaii County and \$12.3 million for the state, both piercing the \$10 million level for the first time. Big Island producers shipped 49.1 million pounds as fresh fruit and processed the remaining 5.4 million pounds into puree. The Big Island production was 32.2 percent more than the 1980 crop, and the value was 25.4 percent more than in 1980.

Revenues would have been much higher last year but for the EDB (the gas used to treat the fruit for shipment) problem in the fourth quarter which prevented shipments to California, the largest market on the Mainland. That problem was not resolved until April and so will affect this year's sales too. Persistent rain the past winter and spring resulted in an outbreak of the phytophthora disease that wiped out Kauai's largest producing area and did wide damage on the Big Island. The 1982 crop was originally forecast at 75 million pounds, but the EDB and disease problems have knocked projected output to 50 million pounds for the year.

The biggest problem for the industry is still transportation. The removal of wide-bodied jets on the Hilo-Los Angeles run will just about eliminate that airlift, and the fruit will have to be transhipped through Honolulu. Limited surface schedules between Hilo and Honolulu plus the fact that interisland barges don't

operate on holidays may be the bottleneck for shipments to the Mainland. Department of Agriculture officials from Washington, D.C. were recently in Hawaii to look into the transportation problem, but it is not certain what they will propose to alleviate the problem.

Amfac Tropical Products, formerly Puna Papaya Co. and the largest grower, is planning to double its acreage in five years. Its orchard area now covers 1,600 acres. Amfac's plan is to have independent growers manage the new areas with farms being a minimum five acres in size and ranging upward. Amfac would purchase the fruit from the growers. The expansion will be in the Opihikao area after the final harvest of sugarcane. This expansion is expected to increase production 20 percent annually. The company's puree plant is processing all of its less-than-market-grade fruit plus what it can purchase from other growers. Acceptance has been good and it is not able to supply the demand this year. The puree is packed in aseptic containers, which increases the shelf life tremendously so the product can be sold around the world. The company is also working on new products made from papaya puree and also from guava puree, which the plant has started to produce this year.

Hawaii County Statistics

	unit	period	1977	1978	1979	1980	1981	7 mo.* 1982	% change 7 mo.* 1982/1981
Population, Resident	number	July 1	83,000	85,700	89,000	92,053	n.a.	n.a.	—
Per Capita Personal Income	dollars	total	6,634	7,137	7,666	8,400	n.a.	n.a.	—
Civilian Labor Force	number	mo. avg.	37,850	37,400	37,250	41,850	43,350	43,300p	0.5
Employment	number	mo. avg.	34,350	33,700	34,250	39,150	39,950	39,200p	-1.4
Unemployment	number	mo. avg.	3,450	3,750	2,950	2,700	3,400	4,100p	22.4
Unemployment Rate	percent	mo. avg.	9.2	10.0	8.0	6.4	7.8	9.5p	23.4
Total Job Count ¹	number	mo. avg.	34,100	35,400	36,300	37,150	37,300	36,850p	-0.7
Tax Collections ²	thous. \$	total	37,719	44,736	51,689	57,404	59,698	26,155	-25.5
Total Bank Deposits	thous. \$	end per.	235,232	262,759	306,791	359,438	348,164	352,225	1.8
Debits to Demand Deposits	mil. \$	total	1,754.3	2,009.5	2,495.7	2,945.1	2,908.4	1,667.6	-2.7
Private Permits									
Residential	thous. \$	total	39,505	60,963	91,942	108,380	73,819	44,209	-10.6
Single Family	no. of units	total	1,070	1,382	1,429	1,192	1,030	476	-26.0
Multi-Family	no. of units	total	133	334	734	739	239	176	8.6
Non-Residential	thous. \$	total	11,850	13,408	20,547	37,598	62,637	8,317	-83.1
Public Contracts Awarded	thous. \$	total	26,884	26,263	46,965	42,543	48,362	14,239	35.5
Federal	thous. \$	total	7,806	4,156	2,152	1,924	4,857	25	-99.3
State	thous. \$	total	13,370	16,551	39,818	31,822	40,084	11,630	131.6
County	thous. \$	total	5,708	5,556	4,994	8,798	3,421	2,584	23.7
Estimated Westbound Visitors	thous.	total	839.0	909.0	860.9	761.1	648.4	392.2p	2.5
Intended Length of Stay—Westbound	no. of days	mo. avg.	3.14	3.26	3.41	3.47	3.59	3.70	2.5
Hotel Inventory	number	June	6,051	6,064	6,056	6,260	6,859	7,106	3.6
Hotel Occupancy	percent	mo. avg.	61.0	65.0	62.0	52.7	44.9	44.2	0
Telephones in Service	number	end per.	55,941	58,661	62,322	66,405	70,183	70,900	3.8
Motor Vehicle Registration	number	total	60,374	63,025	67,718	70,047	75,812	n.a.	—
Sugar Production, raw sugar 96 ²	thous. tons	total	374	387	388	367	384	194	-15.8
Diversified Agriculture	mil. \$	total	44.2	54.7	65.6	78.1	86.9	n.a.	—
Crops	mil. \$	total	28.9	34.7	44.4	55.7	63.9	n.a.	—
Livestock	mil. \$	total	15.3	19.9	21.3	22.4	23.1	n.a.	—

p = preliminary

n.a. = not available

*except hotel inventory (June) and 1980 resident population (April 1).

¹Refers to number of jobs rather than number of persons employed. Persons with more than one job are counted more than once.

²Totals do not include real property taxes.

KAUAI COUNTY IN 1982

A Report by the Research Division

October, 1982

In 1982 the recession that has gripped Kauai for more than three years began to bottom out, and by midyear the economy was beginning to make a slow recovery. It was tourism, the county's largest industry, that was the major factor in causing the worst recession on the island since 1950, and it is tourism that is leading the recovery. After three years of steadily larger losses in visitor arrivals, Kauai began to see a small improvement in numbers in the spring. The increase in arrivals accelerated in the summer, and prospects for the rest of the year are encouraging.

The sugar industry, Kauai's other major economic base, will do better financially this year but may only break even as a whole. A big world oversupply of sugar continues to depress prices and that situation probably won't change for another year at least. The inclusion of sugar in the Farm Act last year brought price supports for domestic producers. The effective support level, however, was below production costs, and it was only the imposition of import quotas this year by the federal government that raised prices further to a break-even level. Harvesting was delayed this year due to heavy rains at the beginning of the year and four weeks of enforced layoffs at three of the five plantations due to record losses last year. But the plantations continue to do well at the production end, with increasing yields being reported from new cane varieties in drip-irrigated fields.

Diversified agriculture suffered a double jolt this year. In the first quarter the prime bearing orchards of the Moloaa Papaya Cooperative were devastated by a fast-spreading fungus that killed most of the trees. Then Amfac Aquatech announced in September that it will terminate its pilot prawn production program at Mana. If the program had been successful, the company was going to get into commercial production by converting 400 acres of sugarcane land into ponds for the prawn culture. The most encouraging news for diversified agriculture is that the three mainland seed companies with operations on Kauai are all seeking additional acreage to expand their successful seed corn research and culture businesses.

The construction industry, as in every other county, is in recession and the volume of work will undoubtedly decline further. The value of private residential permits is down 31.8 percent and private nonresidential permits down 18 percent for the first eight months of 1982 compared with the same period in 1981 which also was a poor year. The industry is being sustained largely by government contracts. For the first eight months, state contracts awarded are up 5 percent to \$12 million, federal contracts awarded are up from almost nothing last year to \$4.8 million, and county contracts awarded have more than doubled to \$6.2 million. Large projects include resurfacing the runway at the Pacific Missile Range, the new Lihue Airport runway, and the Brydeswood Terrace subdivision, a county housing project. Kauai's largest contractors are surviving only because of government contracts. Little relief is seen in the private sector for at least a year. Construction employment has dropped sharply this year. From a recent high of 1,250 jobs in January 1980, the job count was down to 950 in January of this year, dropping to 650 by August.

Despite the adversities in agriculture and construction, the economy has bottomed out and is beginning to recover. The buoyancy is being provided mainly by the revival of tourism, rising retail sales, and increasing defense expenditures at the Pacific Missile Range.

Running counter to the general decline in employment are hotel jobs, which in the first eight months of 1982 have increased by 18 percent, due to the opening of the Kauai Beach Villas at Nukolii, and to further staffing at the Waiohai and at the new wing of the Kauai Sheraton, both of which opened last year.

The employment base in retailing is also increasing with the opening of the Kukui Grove Center at Puhi. Liberty House, Woolworth, Sears, Star Market, and Longs have opened and space for another major tenant is being negotiated. These six major tenants will take up more than two-thirds of the 300,000 square feet of leasable space. Employment is around the 500 level and may reach 700 when the entire center is leased. Kauai's retail sales will definitely increase because consumers will no longer need to do their shopping in Honolulu as the center will carry much merchandise formerly not available on the island. Opening day sales at Longs hit a new record, surpassing the previous high established by the Kahului outlet on Maui in 1971. The adjoining 18-acre Kukui Grove Commercial Village is 60 percent leased, and tenants are beginning construction of their own buildings.

The Coconut Plantation Marketplace, a more mature shopping center that caters to visitors, reports a continuing increase in sales. Sales per square foot have been rising steadily over the past decade, and June per-square-foot sales were up 7 percent over the previous year and up 13 percent over June two years ago.

Defense expenditures at the Pacific Missile Range at Barking Sands are getting to be an important sector of Kauai's economy. The operating budget at the base last year was \$25 million, including payroll of \$8.3 million for Dynalectron Inc., which has the civilian contract for housekeeping and other duties on base. In addition, the public works section of the base has been more active, repairing and adding to the Barking Sands facility. A \$5 million resurfacing of the main runway began in September and will take a year to complete. A half-million-dollar project of installing the arresting gear on the runway may be added to this contract. Various other projects that include road paving, expanding fire protection systems, expanding office facilities, building repairs, upgrading the base club, and building child care facilities, total more than \$1.6 million and have been either contracted for, or are in the bidding process. Barking Sands is rapidly developing into the military's premier undersea weapons testing facility.

The four-term tenure of Mayor Eduardo Malapit comes to a close at the end of this year. One of his objectives when first elected was to upgrade Kauai's economy in concert with the General Plan. He pushed tourism as a clean and sure way to broaden the economic base. He accomplished this although the Nukolii issue of allowing visitor facilities to be built in a basically agricultural area tarnished that achievement in the eyes of



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many residents. He improved the crime prevention effort by getting his administration to work more closely with the Police Department, having been a prosecutor earlier in his career. He improved the fire protection system on the island, which helped lower fire insurance rates. He pushed the program for better parks and neighborhood facilities for the island. The mayor also pushed a public housing program that has put many residents into homes of their own in the past eight years.

TOURISM

Kauai County is beginning to emerge from the worst recession in tourism it has suffered since the industry began its modern era after World War II. Most hotel operators had predicted a slight improvement for 1982, and that is exactly the way the year is turning out. Yet, that is good news for the industry because Kauai had suffered accelerating declines in visitor arrivals for three consecutive years, and the hotels were in or near deficit situations in 1981.

The industry's three-year decline was similar to that on the Big Island, but not as steep. Kauai's visitor arrivals peaked in 1978 at 837,712, and dropped for the next three years to a low of 730,963 last year. For the first eight months of this year, total arrivals pushed up to 513,810, an increase of 1.7 percent over the first eight months of 1981. However, occupancy for the same period averaged 60.7 percent, a big drop from 66.5 percent for the same period last year. The major reason for the drop in occupancy is the addition of new hotel units. At the end of June, Kauai had 5,207 hotel units, up from 4,832 at the same time last year.

Some hotel operators are very bullish for the rest of the year and 1983, other hotels are holding their own, and some hotels are still having problems. It appears that some hotels have been losing their traffic to condominium operations. The established condominium operations in Poipu and Princeville did not have any large increase in visitors during the first eight months. However, two smaller operations reported higher occupancies. The Kauai Beach Villas at Nukolii, which opened early this year, was running an average of 75 percent occupancy for the first eight months. It has 125 of its 150 units in a rental pool. And the Pono Kai in Kapaa, where 83 units are in a rental pool, had an 80 percent occupancy. They are both managed by the Hotel Corp. of the Pacific, which has a worldwide marketing service. Most of the visitors at the two destinations were from the Mainland, but there also were visitors from Australia, New Zealand, England, and West Germany. The 35-unit Kuhio Shores at Poipu, which Hotel Corp. also manages, was not doing as well. Its occupancy for the first eight months was only 50 percent. Hotel Corp.'s fourth property, Islander on the Beach (formerly Islander Inn), has been refurbished, and half of the 140 rooms were opened in July with the remainder to be opened for the winter trade.

Construction of a 350-room hotel, to be managed by Hilton Hotels Corporation, got under way last year at Nukolii, with opening slated for October 1983. However, the project may not be completed as the State Supreme Court on October 14 overturned the decision of the Circuit Court and upheld the 1980 referendum vote against the Nukolii development.

The confidence of visitor industry leaders for an improving flow of business stems from the great effort in promotion that they together with the County put into motion last year during the depths of the visitor recession. In July the County and the industry, working together for the first time, brought Honolulu travel wholesalers to Kauai for a sales conference. There were 25 participants. The objective was to stop the decline in the visitor flow to Kauai, and to regain for Kauai the former share of state visitors it once enjoyed. The County and the private sector also combined to produce the Kauai Vacation Guide to be used as a marketing tool with travel agents. It cost the County \$10,000 and the private sector contributed \$25,000. The County Council has been more supportive of the Administra-

tion in visitor promotion than in the past, although the latter has had to be creative with the small amounts of funding the County could afford. Its prize-winning booth at the ASTA convention cost only \$3,000, and it got wide TV exposure. The County is now represented at all major trade shows, and Kauai is getting a steady exposure to travel agents and potential vacationers.

A private sector movement that is in the formative stage is going to promote the Poipu resort destination through an association to be called the Poipu Resort Association. Although it has not been organized formally yet, it has been engaging in joint advertising. The organizers of this association are Poipu Kai, Waiohai Hotel, Poipu Beach Hotel, Kiahuna Plantation, and Sheraton Kauai Hotel. Once they have a formal organization, they will invite other operators to join the association and help promote the area. Poipu will have a golf course soon, and already boasts some fine restaurants, large new meeting facilities, numerous tennis courts, and nice beaches. The advertising campaign proclaims Poipu as the "sunniest Hawaiian beach resort of them all."

The Waiohai Resort—made up of the 460-room Waiohai Hotel and the 150-room Poipu Beach Hotel—is a prime property, and is Amfac's flagship hotel on Kauai if not for the entire state. It has assigned an up-and-coming young manager, Maui-born Juan Aquinde, to sell the brand-new Waiohai to the traveling public. As regional vice president and general manager, Aquinde is making every effort to make Amfac's first top-of-the-line hotel a success. With a year's operation since its opening, the Waiohai is beginning to see a surge in reservations for the rest of the year. The group meeting and incentive markets are very strong, and heavy promotion is beginning to attract this business market to Poipu. Waiohai's conference facilities have a total of 14,000 square feet of floor space.

The Sheraton Kauai Hotel is basically a new property also. Its new wing of 230 rooms was opened in November last year, and with its beachfront unit of 170 rooms it is now a 400-room hotel. The original hotel consistently enjoyed better than 90 percent occupancy, but opening a new wing in the depth of the recession hurt. However, the situation has improved in the past few months when occupancy has ranged up to 75 percent. With its new ballroom for meetings, the hotel is promoting its facilities for incentive tours and group meetings. Combined with the Waiohai meeting facilities, sizable conferences should be attracted to Poipu.

For the first eight months, Kiahuna Plantation had been running the same occupancy as last year, but the one-year-long 10th anniversary promotion that started September 1 and offers special rates has produced a good response. The promotion ends when Kiahuna is ready to open its Robert Trent Jones-designed championship golf course at about the next anniversary date. Also under construction is the 90-lot subdivision at the Kiahuna Golf Village. All the lots have been sold, and owners will be able to start building their homes beginning in November. In the planning stage is another subdivision of 70 lots which may be revised to 50 larger lots in the same area. Architectural plans for the commercial area in the golf village are expected to be completed about the end of the year, with construction estimated to begin at midyear 1983.

Poipu Kai has been acquired by the Housing Group, a Mainland firm, which owns the inventory of unsold units and undeveloped lands at Poipu, and the operating entity. It is being administered by a subsidiary, Housing Group-Hawaii. The new firm is working on plans for the development of a 40.2-acre tract on the east end of the property, and several smaller undeveloped acreages. It will deed 2.7 acres to the County for a public park.

Princeville Plantation has also had a flat year in the first half of this year, but traffic appears to be picking up in the second half. Joint promotion by the Princeville Resort Operators Association no doubt is helping get the Princeville name before the Mainland public. Princeville Airways has seen its patronage nearly double during August, flying in many golf tours. The association is made up of Princeville Development Corp.,

Papillon Helicopters, and Village Resorts, which operates the Hanalei Bay Resort. Princeville is now negotiating with Sheraton Hawaii Corp. to manage the proposed hotel above Hanalei Bay.

RENEWABLE ENERGY

Power generated from renewable energy sources will hit a new record this year, and the prospects for further gains in the next decade look very promising. In fact, those working closely in this area feel that making Kauai electrically self-sufficient is technically feasible if the projects now being readied or planned can be financed.

Kauai Electric Co.'s power sales have been increasing at a rapid rate in the past few years, faster than any other county. This would indicate a rather vigorous expansion of the county's economic base in the form of new hotels, condominiums, shopping centers, and government projects that require electrical energy. Total energy sales in 1981 reached 199.4 million kilowatt hours, a 5.6 percent increase over 1980. This year sales are projected to be in the area of 210.6 million kilowatt hours, which would be another 5.6 percent increase.

The good news from Kauai Electric is that more and more of the power is being generated from renewable energy resources right there on the island, helping the utility to reduce its imports of oil and lowering electricity rates for customers.

In 1981, Kauai Electric purchased 95 million kilowatt hours from the sugar plantations which generated that power from biomass fuel and hydroelectric generation. That made up 47.6 percent of the utility's total sales last year. The projected purchase for 1982 is 109.5 million kilowatt hours, a 15 percent increase over 1981 purchases. This will represent a 52 percent proportion of power from renewable energy sources and 48 percent from fossil fuel. The utility has also computerized its generating units and the increased efficiency has lowered its cost of operation. This plus the lower cost of purchased power has permitted Kauai Electric to reduce its rate charged customers by 13.5 percent since the beginning of the year, bringing the rate down to the mid-1980 level. In 1981 it paid \$4.7 million for alternate energy and spent \$10.5 million to generate its own power from oil. In 1982 the corresponding numbers are projected at \$5.7 million for alternate energy, and \$9.5 million for cost of its own power generation. The utility estimates that no new generating unit need be built until 1990, but if renewable energy sources continue to be developed, that date could be pushed back farther.

The County is continuing to study the feasibility of using the refuse it collects daily as an energy source. Preliminary studies show that this source could be utilized, but it is small. The net daily refuse would be able to fire up Lihue Plantation's boiler for two hours or less per day.

The wettest of years in recent years has brought hydroelectric power generation plans to the forefront on Kauai. There are many plans for new projects, which all appear feasible if only they can be financed. And some way to finance these projects will have to be found if the developers are to take advantage of the federal energy tax credits which expire in 1985. The tax credits could make the difference in whether or not the projects can be financed.

Olokele Sugar Co. dedicated its new hydroelectric generating plant in the spring, and operations began in May. The generating unit has a 1.25 megawatt capacity, and Olokele expects to export six million kilowatt hours of power annually. The old hydroelectric unit that was displaced used to deliver about a million kilowatt hours of power to the utility. Two weeks after the new unit came on line, a bearing burned out, and the unit was shut down for repairs until September.

Amfac Inc. has several hydroelectric plans at various stages of development at its Kekaha Sugar Co. and Lihue Plantation Co. subsidiaries. Amfac engineers estimate that 45 million kilowatt hours of power are generated annually on Kauai by hydroelectric units. This is 15 percent of total power generation

on the island. They estimate that this volume could double in the next ten years if the projects now being studied are built. Consumption of energy would have gone up also, so the doubling of hydroelectric power generation in ten years would account for an estimated 25 percent of total power generation on Kauai at that time.

Two hydroelectric projects are being considered for Kekaha Sugar. One is the Kitano project and the other is the Kawaikoi dam project. Kitano will use the waters of the Kokee ditch at a point several miles mauka of the Waimea flatlands. The water will flow into the penstock of a 24-inch diameter pipe and run downhill for 9,000 feet with an 800-foot drop. The water will run a hydroelectric generator of 1.4 megawatt capacity at the lower end and then discharge into the ditch. The plant will produce eight million kilowatt hours of power annually most of which probably can be sold to Kauai Electric. The project will cost approximately \$2 million, and the goal is to be on line by the end of 1983.

On the Kawaikoi dam project, Kekaha Sugar and the State are working jointly on a feasibility study and on the environmental impact study. This project is similar to a 1964 proposal which would have created a 12-billion-gallon reservoir, but the current project would be of smaller reservoir capacity. The study is expected to be completed late next spring, and at least three public meetings are planned to report on the project. The dam on Kawaikoi stream would create a reservoir which would feed Kekaha Sugar's Kokee ditch with a steady flow of much greater volume than at present. The excess water would be diverted westward to irrigate 1,500 acres of arid but fertile land above the Mana flats. Two ditches are planned to bring water to the two plateau areas. The drop in elevation would be used to operate hydroelectric power plants on both ditches like the Kitano project. The generators would have capacities ranging from one to two megawatts and would be able to generate a large amount of power. There would also be opportunities to build other smaller hydroelectric power plants of under one-megawatt capacities on this new irrigation system. This project would bring 1,500 acres of good agricultural land under cultivation and in the process could generate more than 20 million kilowatt hours of power through the series of hydroelectric power plants that could be built along the ditch system. Kekaha Sugar's two hydroelectric plants today produce seven million kilowatt hours of power annually, and the Kitano project will add eight million kilowatt hours.

Amfac is also planning to upgrade Lihue Plantation's two hydroelectric plants. The work will begin when funding becomes available. The project involves repair of tunnels and ditches, and modification and improvement of the plants. The plants are now producing eight million kilowatt hours of power annually. When they are upgraded, power generation will increase to 11 million kilowatt hours annually.

A new hydroelectric power project for Lihue Plantation is also under study now. This would use the water now being diverted from Hanalei Valley through tunnels and ditches to the Wailua side. The plant would utilize a 560-foot drop to generate the power.

The U.S. Army Corps of Engineers is also studying a proposed hydroelectric power plant using the waters of the Wailua River. Corps engineers are looking at a plant with a five-megawatt capacity that would generate about 11.3 million kilowatt hours annually. However, the study is not completed, and it would have to go to Congress for final approval and funding which could take several years. The preliminary proposal calls for the penstock running from 400 feet above Wailua Falls down to the bottom where the plant would be located.

McBryde Sugar Co. is the largest producer of hydroelectric power in the state, with most of it generated at the Wainiha plant, which was built in 1905. It has a four-megawatt capacity but produces around 28 million kilowatt hours of power annually because of the good supply of water and the velocity created by the 560-foot drop.

A new hydroelectric unit is being planned by McBryde

about 4.5 miles above the present power plant, using the same water that feeds the present plant. This would require the construction of a new water intake about 2.5 miles further inland. The new penstock will start at the 1,150-foot elevation and end at the 700-foot elevation, utilizing a 400-foot drop to propel the new generating unit, which will have a three-megawatt capacity. McBryde's engineers estimate that this plant will produce around 19 million kilowatt hours of power annually, giving its Wainiha stream system a potential generation of 47 million kilowatt hours annually. McBryde supplies Kauai Electric with 7 percent of its total annual power sales today. With the completion of the new project, sales would increase to 16 percent of total island needs at 1982 consumption rates. Preliminary engineering studies will be completed next year, and if they turn out positive, construction could begin before the end of 1983, with power generation scheduled to begin in 1985. This project will cost an estimated \$8.7 million.

AGRICULTURE

Kauai County's agricultural sector suffered its worst decline in 1981 because the sugar industry had record losses. The huge loss suffered by the sugar industry had a much greater impact on Kauai because this key industry accounts for more of the island's agricultural receipts than in any other county. In a normal year, sugar makes up about 85 percent of Kauai's farm receipts compared with 55 percent for the Big Island, 43 percent for Maui County, and 21 percent for Oahu. The figure for the Big Island will drop below 50 percent when Puna Sugar Co. closes down in 1984. What this means is that Kauai raises few crops outside of sugar while the other counties have flourishing diversified agriculture bases.

Total farm receipts for 1981 amounted to \$57.6 million, down 39 percent from 1980 when the County got \$94 million from agriculture. The farm value of unprocessed sugarcane was only \$46.6 million last year compared with \$83.6 million in 1980, a drop of 44 percent. The value of livestock sales was also down, entirely due to a sharp drop in receipts from cattle sales. Total livestock revenues (including hogs, chickens, eggs, and milk) amounted to \$5.2 million, down 8.5 percent from the \$5.7 million received in 1980. The value of cattle sold came to only \$2.3 million in 1981, a decrease of 26.4 percent from 1980 when receipts totaled \$3.1 million. The number of cattle operations on the island declined by 10 to 140 during last year, and the number of feedlot cattle sold last year was only 1,000 compared to 2,800 in 1980. The number of grass-fed cattle sold was 3,600, 400 more than in 1980 but not enough to balance out the drop in feedlot cattle. The inventory of cattle and calves at the beginning of this year was down by 1,400 to 17,000 from a year previous, the lowest level in recent years.

Kauai County's diversified crops returned receipts totaling \$5.7 million last year, up from \$4.6 million in 1980. But that was barely 5.5 percent of the total statewide receipts for diversified crops. The biggest revenue generator was fruit, which passed the \$2 million mark for the first time to \$2.1 million, 36.4 percent more than in 1980. Three-fourths of 1981 receipts were made up by papaya, which recorded a 20 percent increase in sales last year. The remainder was accounted for mainly by increases in guava and banana sales. Field crops, made up largely of seed corn, were valued at \$1.3 million last year, a 20 percent increase over 1980. The three seed corn firms on the island are doing well, and all are seeking more land to expand their acreage for field experiments and growing seed. Receipts for flowers and nursery products last year came to \$740,000, a 20.3 percent over the \$615,000 reported in 1980, the only Neighbor Island to report a large increase in this category. However, Kauai's output was only 2.5 percent of the state total. Taro growers reported an 8 percent increase in receipts to \$934,000, but this was due to higher prices as production dropped 2.2 percent to 4.45 million pounds. Receipts from vegetables and melons came to only \$595,000, but that represented a 10.8 percent increase over 1980. Kauai accounted for only 2.7

percent of total statewide receipts from this source.

Kauai County wants to expand diversified agriculture, and politicians have promised to push this sector in order to expand Kauai's economic base and make it more self-sufficient. Last year Kauai had 100 acres in vegetable production, a small proportion of the state's vegetable acreage. But it had 800 acres in fruit production, mostly in papaya, guava, and banana. Another 600 acres were in other crops such as seed corn, taro, forage crops, flowers, and nursery products. Expanding production to capture a larger share of the state produce market, for example, will not be easy. The best chance for growth would be in export crops such as papaya, guava, and seed corn.

County efforts are also being channeled into making aquaculture a bigger industry on the island. This is a new industry for Hawaii, and the technology is still being perfected. Amfac's decision to get out of prawn culture was a blow to the young industry. Receipts from aquaculture last year increased by about 27.5 percent to \$42,100, according to State statistics, but Kauai's output was only 12.4 percent of total statewide receipts. Kauai County remains the largest producer among the Neighbor Island counties.

Sugar

As in the other counties, Kauai's sugar plantations have had one of the heaviest rainfalls on record in the first half of this year. The heavier-than-normal rainfall started late in the fall of 1981. These plantations had recorded much more than their normal annual rainfall in less than six months. Rainy weather delayed ripening of sugarcane and hampered harvesting, but there were benefits also from the heavy precipitation, especially for the irrigated plantations on the leeward side of the island. The lowered requirement for pumping water for irrigation not only saved the plantations a lot of power but the high volume of water increased hydroelectric power generation, resulting in increased power sales to the electric utility.

The heavy rains and the four weeks of layoffs imposed at three of the five plantations due to heavy losses last year have delayed harvesting, and some of the plantations may not be able to complete their harvests this year.

The real benefits of drip irrigation under ideal conditions are being demonstrated this year at Kekaha Sugar Co. where one field has yielded a record 21.14 tons of sugar per acre from a 64-acre tract. Sugarcane needs a lot of water and sunshine to be most productive, and these two elements have been available to this field. This was the second crop produced under drip irrigation. The first harvest two years ago as a drip-irrigated field yielded 19.85 tons of sugar per acre. In comparison, the average yield for the sugar industry last year was around 10 tons of sugar per acre.

Because of its late start, Kekaha Sugar may not be able to complete its harvest and its crops may be smaller than that in 1981. However, if the goal of 54,614 tons of sugar for 1982 is reached, the average yield will be 14.99 tons of sugar per acre, a new record. The 1981 crop averaged 14.03 tons of sugar per acre, and the record of 14.59 tons of sugar per acre was established in 1968. The summer water flow has been the best since the plantation began keeping records, with the Waimea ditch at the maximum capacity of 55 million gallons a day, and the Kokee ditch flowing at 14 million gallons a day.

Olokele Sugar Co. is also noted for its good sugar yields. Unfortunately not all of the sugar is recovered during wet weather. Olokele's factory cleaning plant does poorly in wet weather when a lot of debris and mud are delivered with the sugarcane. Recovery of the sugar drops precipitously as Olokele has experienced this year. The plantation is planning to have a study made to see what it will cost to upgrade the cleaning plant. Still the yield from the best drip-irrigated fields is better than 15 tons of sugar per acre, and the average yield for the 1982 crop is estimated at 12.83 tons of sugar per acre. Delayed by bad weather at the beginning of the year, Olokele is working six days a week to catch up on its harvesting, but may not be able to bring in the entire crop.

Despite all the rain, Olokele is still a water deficit plantation. The conversion of most of the fields to drip irrigation has helped the situation greatly, but there are periods when the plantation is short of water. The great landslide at the head of Olokele Canyon last year has affected the stream flow and the volume of water the plantation has been getting from this source has diminished.

McBryde Sugar Co. was a major beneficiary of the heavy rainfall on Kauai, which came in the form of a continuous series of showers instead of sudden heavy spurts as happens frequently in Hawaii. The resulting excellent stream flows greatly increased hydroelectric power generation at both the Wainiha and Kalaheo power plants. Because of the steady showers, pumping water for irrigation was reduced to a minimum, and power that will be sold to the utility this year will reach a record volume of 20 million kilowatt hours. This compares with 16 million kilowatt hours sold last year and 9.8 million kilowatt hours in 1980. But the revenue gain is many times larger because the price received for the power in 1980 was six mills per kilowatt hour compared with 4.6 cents per kilowatt hour this year.

On the production side, McBryde is looking for a slightly larger crop this year of 58,030 tons of sugar, up from last year's 56,552 tons. The yield is expected to be 9.3 tons of sugar per acre this year compared to 9.06 tons last year. The company attributes the increase to drip irrigation—more acres of drip-irrigated fields being harvested this year than last. The conversion of the last furrow-irrigated fields to drip will take place later this year after those fields are harvested. The 700 acres irrigated with water discharged from the factory will not be converted. By next year, 6,720 acres or slightly over half of McBryde's cultivated acreage will be in drip. The remainder, not counting the 700 acres, is unirrigated.

The company has spent about \$1.6 million to increase the efficiency of its factory operations this year. A new cane delivery system was completed about midsummer, and a wet scrubber has been installed in the mill stack. Previously, the huge cane trailers were unloaded at the mill yard as part of the milling process. When the mill broke down, the processing stopped and the trailers sat in the yard until repairs were completed. Harvesting eventually had to stop for lack of trailers. A new unloader was installed this year so that trailers can be unloaded even when the mill stops. The factory stack had been kept in compliance with emission standards mechanically, but the installation of the scrubber monitors the emission automatically and keeps it within EPA standards.

Lihue Plantation Co.'s latest forecast calls for a slightly larger crop this year than last, but yield is down this year mostly due to wet weather. Through August, the plantation has received about 230 percent of normal rainfall which forced harvesting behind schedule. The plantation estimates that it will have a production of 75,000 tons of sugar this year. Yield for the first eight months averages 8.9 tons of sugar per acre, down from the 1981 average of 9.3 tons of sugar per acre.

Lihue Plantation had started a program of no ratoon crops last year, but it has modified that with selected ratooning where the cost-benefit ratio warrants. A ratoon crop is one that is grown from the stool that remains after the harvest. This program will take up from 3 to 5 percent of the total acreage. The remainder of the fields will be replanted after each harvest.

The plantation has started a new program of fallowing about 1,700 acres of its less productive lands for a year or two years. These lands will be recycled back into production when other lands are fallowed. Despite the reduction in acreage, the plantation expects to get the same production by improved farm management.

Papaya

Papaya production on Kauai reached a new record last year and the industry was poised for another record in 1982 when disaster hit. When California, the biggest market for Hawaiian papayas, refused to accept papayas treated with EDB, Kauai

growers together with those in the rest of the state were forced to dump a lot of fruit. Because of this inability to market all of the fruit, much was left on the trees to fall and rot. Then heavy rains hit the state toward the end of 1981. The result was an eruption of phytophthora disease, especially on Kauai. By the end of December, 20 percent of fruit-bearing trees at the Moloaa Papaya Cooperative were lost, and by March, 70 percent were wiped out. While production hit a record 7.2 million pounds last year, the crop this year is expected to fall to 2 million pounds.

The 30 percent of trees saved were nonbearing, and they were sprayed weekly. Replanting began in April with fumigation of the soil. The orchard is expected to be back in full production by next February, and barring any more disasters, production in 1983 is forecast at 8 million pounds, and more than 10 million pounds for 1984. Most of the increase will come from new orchard areas in Koolau, Kapahi, and Kilauea. Packing and marketing are handled by the cooperative, Best Fruits Inc. Anticipating the expanded production, Best Fruits is expanding its packing lines and reefer space. Because of the lack of air cargo space, Best Fruits is planning to ship its papayas in Matson containers to Honolulu and on to Oakland next year. It will take a closer look at the Oahu and Maui markets, to see if they can absorb some of the new production. The cooperative had been working with the County for a promotion for papaya when the rains came last year. That postponed program will be launched in midyear 1983.

Guava

Guava ran into an oversupply situation last year, and production was down substantially on the Big Island. But the crop on Kauai took a big jump last year, and is expected to climb again this year, due to the great yields at Kilauea Agronomics orchards. It has 350 acres in guavas, and is the largest producer in the state. The oldest trees are five years old and are only now approaching the higher yielding age. Production last year was 2 million pounds, up from 700,000 pounds in 1980. The 1982 crop is expected to double again to 4 million pounds. Not all the trees are bearing, and those that are have not reached their peak yield, so annual production will keep on growing rapidly during this decade. Despite the glut elsewhere, Kilauea Agronomics reports that its production is being marketed totally, with 60 percent going to the Mainland. Although guava is a seasonal crop in its natural habitat, the company has developed controls so that the trees bear throughout the year. The result is processing that is spaced out throughout the year so that less storage is required and carrying costs are reduced since the puree is frozen for shipping. There are fewer seasonal workers and the labor force is essentially employed year round. The freezing capacity was the bottleneck as production grew, and it was doubled last year. The company may have to expand that freezing capacity again next year, so that it can process all of its production at its plant.

For the first two years, part of Kilauea Agronomics' production was processed by Hawaiian Fruit Preserving Co. of Kalaheo, a long-time processor of juices, jams and jellies under the Kukui brand. Hawaiian Fruit Preserving Co. now has excess capacity, and is seeking growers of passion fruit. Most of its products are sold in Hawaii, but it is testing the market in California.

Aquaculture

In attempting to diversify an economy long dependent on sugar, Kauai County was counting on aquaculture to lead the way in the decade of the '80s. Prospects appeared favorable because Hawaii's largest firms were interested in investing in this new industry which in early research had proven economically viable. But in a space of a little over two years, two large research projects on prawn culture were called off before reaching the commercial production stage, and aquaculture as an industry has been set back many years, perhaps never to recover on the scale that had been planned for Kauai.

The latest casualty was Amfac, which announced in September that it will end its pilot prawn production project in Mana on West Kauai, and return the land to sugar cultivation. C. Brewer & Co. had announced in May 1980 that it was getting out of the prawn raising business after three years of pioneering effort by its Kilauea Agronomics subsidiary in Kilauea.

Brewer was stymied by production problems caused by cool weather as the result of prolonged cloud cover over the pond area that reduced temperatures and affected growth rates of the prawns. Four months after Brewer called off its effort, Amfac staked out 60 acres of Kekaha Sugar Co. land in Mana where weather conditions were considered very favorable for prawn culture. Rick Gibson, who had raised the state of the art of prawn culture several notches during his tenure with the State, was given the assignment of developing a successful pilot program. In its two-year effort, Amfac proved that a commercial operation would probably be economically viable on the production end. But the poor results from test marketing its prawns on the Mainland forced it to call off the experiment. It had developed a production system that was yielding 3,000 pounds of prawns per acre annually, about 50 percent more than the average production rate for the industry. The cost of labor was reduced significantly from cottage industry levels, and further reductions were possible. An efficient harvesting system was developed. Another accomplishment was the discovery that flash freezing of the prawns would prolong the shelf life of the product for an extended period and thus give marketing a decided advantage. Sales of prawns began a year ago,

but the attempt to develop a market in upgrade restaurants in Chicago and Los Angeles began this year. Partly due to the economic times, sales of the product to restaurants were disappointing, and Amfac decided not to get into commercial production.

Kauai's lone prawn production farm will remain at Prawns of Hawaii Inc.'s operation in Kilauea. It started with 24 acres of ponds several years ago, and last year expanded the operation by adding ten more acres, made up of six nursery ponds and four grow-out ponds. The juveniles are kept in the nursery ponds for about three months, and are then transferred to grow-out ponds. These are the first nursery ponds at the farm, and they are expected to increase yield.

Prawns of Hawaii has installed a 15-kilowatt capacity hydro-electric generator using the water that comes down the pipeline from Kaloko reservoir. That produces enough energy to run the farm, and the water that emerges is used for prawn culture and to irrigate a new 30-acre papaya orchard that was started last year.

The only other commercial operation in aquaculture on the island is Astro Marine Industries at Port Allen, which has been raising and selling black and golden tilapia. It has leased 3.75 acres from Alexander & Baldwin, with half an acre of water tanks for raising the fish. It has been test marketing the golden tilapia in Honolulu, and production is shifting to this variety. A fileting machine has been installed, and some of the production is marketed as filets. Fishcake made from tilapia is also being test marketed.

Kauai County Statistics

	unit	period	1977	1978	1979	1980	1981	8 mo.* 1982	% change 8 mo.* 1982/1981
Population, Resident	number	July 1	36,200	37,000	38,100	39,082	n.a.	n.a.	—
Per Capita Personal Income	dollars	total	6,633	7,147	7,673	8,472	n.a.	n.a.	—
Civilian Labor Force	number	mo. avg.	18,550	18,350	18,500	20,000	20,600	20,700p	0.7
Employment	number	mo. avg.	17,350	17,100	17,450	19,050	19,400	19,100p	-1.5
Unemployment	number	mo. avg.	1,200	1,250	1,050	950	1,200	1,650p	37.5
Unemployment Rate	percent	mo. avg.	6.5	6.8	5.6	4.6	5.9	7.9p	37.7
Total Job Count ¹	number	mo. avg.	16,100	16,650	17,200	18,150	18,200	18,000p	-1.1
State Tax Collections ²	thous. \$	total	16,044	19,190	22,195	25,886	26,523	12,894	-25.7
Total Bank Deposits	thous. \$	end per.	109,809	123,682	139,601	156,029	168,375	176,914	3.2
Debits to Demand Deposits	mil. \$	total	633.7	775.2	955.1	1,132.2	1,109.7	740.9	-0.8
Private Residential Permits	thous. \$	total	21,197	49,005	100,024	74,795	41,388	21,087	-31.8
Single Family Units	number	total	445	555	512	377	353	170	-27.7
Multi-Family Units	number	total	83	623	1,169	793	120	118	0
Private Non-Residential Permits	thous. \$	total	6,822	7,711	13,896	58,299	25,943	13,159	-18.0
Public Contracts Awarded	thous. \$	total	11,364	10,156	13,537	10,938	18,083	23,055	62.8
Federal	thous. \$	total	428	3,349	440	525	527	4,817	3,340.7
State	thous. \$	total	5,628	2,627	8,619	2,179	13,384	12,059	5.1
County	thous. \$	total	5,308	4,180	4,447	8,224	4,172	6,180	142.9
Estimated Westbound Visitors	thous.	total	740.5	837.7	825.4	781.4	731.0	513.8p	1.7
Intended Length of Stay—Westbound	no. of days	mo. avg.	2.97	3.08	3.27	3.40	3.48	3.53	0.6
Hotel Inventory	number	June	3,868	4,097	4,064	4,435	4,832	5,207	7.8
Hotel Occupancy	percent	mo. avg.	80.6	83.3	76.5	69.0	62.7	60.7	-8.7
Electricity Generated	mil. KWH	total	183.2	201.0	204.2	211.1	218.7	147.1	2.2
Telephones in Service	number	end per.	23,576	25,692	27,411	29,274	31,096	32,261	5.4
Motor Vehicle Registration	number	total	26,920	27,614	29,492	30,604	32,932	n.a.	—
Sugar Production, raw sugar 96*	thous. tons	total	232	223	232	223	236	134	-11.0
Diversified Agriculture	thous. \$	total	6,461	7,432	9,489	10,428	10,973	n.a.	—
Crops	thous. \$	total	2,871	3,119	4,119	4,896	5,729	n.a.	—
Livestock	thous. \$	total	3,590	4,313	4,376	5,732	5,244	n.a.	—

p = preliminary

n.a. = not available

* except hotel inventory (June) and 1980 resident population (April 1).

¹Refers to number of jobs rather than number of persons employed. Persons with more than one job are counted more than once.

²Totals do not include real property taxes.

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MAUI COUNTY IN 1982

A Report by the Research Division

December, 1982

In 1982, Maui County's economy began a slow recovery early in the year, a recovery that accelerated in the second half as tourism demonstrated a vigorous comeback after two years of stagnation. The resurgence in visitor arrivals was so strong that the gain by the visitor industry of Maui County countered somewhat the continued weaknesses in construction, sugar, and pineapple.

Maui has cultivated and nurtured tourism so well through the years that the economic rewards are now very evident. A well-coordinated and financed promotion and marketing program undertaken cooperatively for the past decade has brought Maui a steady stream of visitors. During the past two years of statewide decline in visitor arrivals, Maui had the smallest decrease of any Neighbor Island. However, its hotel occupancy rate dropped by a bigger margin because Maui continued to expand its hotel plant. As a result, Maui County today has almost as many rooms and provides more hotel jobs than Hawaii and Kauai combined. When tourism turned upward for the state this year, Maui's strength showed in double-digit gains while gains for the other two Neighbor Island counties were less than 10 percent.

Employment has been helped by the recovery, but the labor force has grown faster than in the other counties, with Maui apparently attracting those looking for work. Although employment has increased on Maui whereas on Kauai and the Big Island it's declined, not all of the additions to the labor force have been absorbed, and the result has been an increase in the rate of unemployment. For the first nine months of the year, the average monthly labor force increased 4 percent or by 1,500 to 40,600. Of the new additions, 800 have been absorbed into employment for a 2.2 percent gain but the rest were added to the ranks of unemployed which raised the average unemployment rate for the year to date to 7.3 percent from 5.8 percent last year.

The sugar industry on Maui will not have as bad a year as loss-ridden 1981, but profits, if any, will be slight. The pineapple industry as a whole is headed for another year of red ink, with the result that one company will close its Molokai plantation and Honolulu cannery. However, one of the three companies will apparently report a profit again.

In worse shape than either sugar or pineapple is the construction industry, which will suffer its biggest decline since World War II. In its deep recession, Maui's construction industry matches the degree of decline that has been recorded in the other counties. In Maui County, however, a strong public works program at the County and State levels offsets some of the drop in the private sector. A recovery is not in sight yet in the private sector, and the bottom may not be reached until well into the new year.

In the first eight months of 1982, the value of building permits for residential construction totaled only \$27.0 million, down 73 percent from the \$98.5 million recorded in the same period last year. The number of single-family units authorized increased by 24.7 percent, but the 87.9 percent drop in the number of multi-family units authorized to only 122 accounted for the big decline. The value of permits for nonresidential construction also took a big drop, going from \$20.4 million in the first eight months of last year to \$10.2 million through August of this year for a 49.8 percent

decrease. But the value of County public works projects increased more than 12-fold to \$18.7 million through September, and State projects almost tripled, from \$5.8 million to \$17 million.

The numerous public works projects, although small, have been beneficial for architects in this period of drought. Even for the largest architectural firm, its biggest project in the second half of the year is the ten-unit addition to the Hotel Hana Maui, although the units are large and luxurious. The project, which will cost \$1.2 million, is the first expansion for the hotel since 1954.

The County has been actively developing housing projects for low- and moderate-income families, utilizing available federal funding. Two Central Maui projects are nearing completion. The Kanaloa subdivision has 68 lots of which 48 were sold as house-and-lot packages for \$74,000 to \$80,000 with three or four bedrooms. Lots were sold for an average \$26,000. The Luana Gardens Phase II project will provide 60 rental units of one, two, three, and four bedrooms. Construction was to begin before the end of this year with a year for completion. The Luana Gardens Phase III project will have 62 units, all of two-bedroom size. This project will be completed early next year. The County has in various stages of planning more than 500 single-family and apartment units in six projects from West Molokai to Hana. One interesting project in Kahului calls for 5,000-square-foot lots using the zero lot line concept with the carports having common walls rather than the homes.

A subdivision that will test whether construction is ready to make a comeback next year is Phase I of Wailuku Heights, being developed by Hawaiiiana Investment Co., a C. Brewer & Co. subsidiary. By October, 80 percent or 220 of the lots were sold. The average lot price is \$80,000. Phase II, to consist of 130 lots, is being reviewed by the County.

The big building project underway in Kahului is construction of a Safeway and a Pay 'n Save store in the block across Kamehameha Avenue from the Maui Mall. Both stores are expected to open for business late next year. A project that is very near completion is the Kahului Business Park, a 35-acre expansion of A&B Properties' industrial park in Kahului. A total of 42 lots ranging from 10,000 to 60,000 square feet will be ready for lease soon.

The proposed revisions to the County Master Plan have made the rounds of public hearings for more than a year, and the County Council is in the process of reviewing the work covering the nine planning regions. With the approval of the County Charter revisions by voters, the master plan revisions will now be at ten-year intervals rather than five years. As the Planning Director says, the best sites have been developed, and the County should be concerned with refinement and quality, so a ten-year revision is practical. "The County should now take care of demand, not create demand," he says.

Maui County has led other counties in economic planning since Statehood and the organization in April of the Maui Economic Development Board shows it intends to stay ahead. The Mayor's Advisory Committee on Maui's Economic Future held a symposium in December a year ago at Kapalua, and the MEDB is a direct result of that conference. The Board is supported by the



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public and private sectors. Its chairman is Colin C. Cameron and its president is Donald G. Malcolm. Funding so far has been by the County and large corporations.

The board's first project is to seek sites of up to 150 acres for the location of a Research Park in order to attract high technology companies to Maui, something all counties are after. The location would be away from existing residential or industrial areas, with room for future expansion. The site would be developed and ready for construction, but the major attraction for potential investors would be a pre-clearing of regulatory requirements so that the company could get started without undue delay. The site would be predesignated in the General Plan, and parameters would be set up that are acceptable to the regulatory agencies involved. If a company meets those parameters, it could get started with less delay. Development of sites for an Energy Park—for investors who want to develop alternate energy such as solar or wind—has also been approved by the board. Many communities want to attract these clean industries, but Maui's approach may have a better chance of success.

TOURISM

The two-year recession in tourism in the state bottomed out early this year, and the industry has fashioned a vigorous comeback for the remainder of the year. Leading the resurgence is Maui County, which like Oahu will establish a new record for number of visitors for 1982. The biggest number of visitors to see Maui County came in 1979, when they totaled 1,420,000. For the first nine months of this year, visitor arrivals are running 12.4 percent over last year and total more than 1.1 million. At this rate, a new record is assured.

Maui County suffered the least among the Neighbor Island counties during the long recession in tourism. Visitor arrivals were down for two years (2.9 percent in 1980 and 2.5 percent in 1981) while Hawaii and Kauai counties suffered three years of decline, and on the Big Island there were double-digit drops. Since June 1979 Maui County has built 20 percent more hotel rooms than the other two counties combined. Maui County's total hotel rooms numbered 12,278 in June 1982, only 35 rooms fewer than the totals for Hawaii and Kauai combined. Hotel occupancy for the first nine months was 74.7 percent, more than three points better than last year even with a thousand more rooms in the hotel inventory. The intended length of stay on Maui of westbound visitors was 4.24 days for the first nine months, a new record. This strength has translated into more employment, with total hotel jobs for the first nine months averaging 6,100, an increase of 20 percent over the average of 5,100 for the same period last year. Hotel jobs have more than doubled since 1976, and are surpassed today only by jobs in retailing.

Fortunately, the improvement in tourism has been shared by all of the resort areas on Maui although in different degrees. The occupancy rate for West Maui hotels for the first nine months of this year is up 5.7 percent to 79.1 percent, while the rate for the rest of Maui for the same period is up 5.2 percent to 61.8 percent.

Maui County's success in tourism is the result of superb promotion carried out cooperatively. First there was the Kaanapali Beach Operators Association in the early 1970s. Then the Maui County Visitors Association coordinated the promotion for the entire county. And last year the Wailea Destination Association put together the first program for that resort area.

The MCVA, headed by Executive Director Frank Blackwell, continues to do a commendable job for the county with a well-coordinated and creative promotional program that reaches out around the Pacific, across the Mainland, and to Europe. The big project the past summer was to get \$70,000 from the County Council for a cooperative advertising program with Japan Air Lines to increase the county's share of the Japanese visitor market. The advertising program started in October.

The Wailea Destination Association is only a year old, but it has accomplished its early objective of getting the relatively new resort destination on the travel agents' map. Its update program has reached about 4,000 travel agents this year. Meetings were scheduled in major cities this year, mainly along the West Coast, at which agents were updated on the latest information about Wailea. The association will be represented in MCVA's "The Other Hawaii" promotion to Chicago this winter where seven meetings are planned with travel agents. The Wailea Pro Tennis Classic last summer, a last-minute project, was another successful event sponsored by the association. It was well attended and a half-hour highlight of the matches will be shown on Public Broadcasting System's Sports America television program. Wailea will sponsor the project again in 1983.

Wailea has attracted more visitors this year, and hotel occupancy has risen above last year's depressed rates. The Hotel Inter-Continental Maui has renovated its ballroom and added three new meeting rooms to its convention center. It now has seven function rooms or more than 10,000 square feet of space for convention activities.

Real estate has not been moving well the past year, but Wailea has sold 80 of the 100-lot Wailea Kai home subdivision by the end of summer. The first increment of 59 lots of the luxury Wailea Golf Estates subdivision has also been put on the market with the average lot going for \$250,000. Wailea is also offering parcels to outside developers for multi-family development. There appears to be an active interest in this program which may be a sign that construction is ready to turn around on the island.

The Kaanapali Resort as usual had a good year in 1982. Average occupancy at its hotels was running at 83 percent for the first eight months, even with two big new hotels. One reason is that the promotion of this well-established resort continues unabated. The L.P.G.A. Kemper Open Golf Championship in the spring was an example. The assistance of 400 people from all over Maui helped make this a successful event. The satellite-live telecast of the final two days of the golf tournament over NBC-TV was a promotional success as Maui had beautiful weather while the nation was freezing.

The Whalers Village at Kaanapali, purchased by Campbell Estate in 1980, will be renovated next summer. The leasable area will be expanded by 16,700 square feet that will provide spaces for 20 new tenants. Substantial improvements are planned for the common areas, and 150 more parking spaces will be added. The project will cost \$3.5 million.

The Maui Marriott Hotel, which opened December 15, 1981, had a good year except for a spring that was below expectations. It conducted travel agency promotions this year and is expecting a good 1983. Its group meeting business was below target this year as some companies cut back their programs. But it foresees a 15 percent increase in group business in 1983. Local patronage of its food and beverage service has been good. The hotel has 720 rooms and is staffed by 700 employees.

The Hyatt Regency Maui increased the number of visitors from the Atlantic Seaboard and Europe this year although the West Coast is still its dominant market. The hotel will be marketed next year as an international resort with promotions in Europe, South America, and other parts of the world. The hotel continues to emphasize its service, with a staff of 1,170 for its 800 rooms. The Regency Club, two floors with concierge service, has been accepted very well, and can be expanded if the demand continues to grow.

The 263-unit Kaanapali Alii luxury condominium apartment project was completed last summer, and sales have begun. Ocean-front units have been selling fastest. Purchasers are mainly from the Mainland, Canada, and Japan.

The Kapalua Bay Hotel is beginning to recover from the recession of the past two years. Since Regent International Hotels took over management two years ago, many of the problems that had beset the hotel have been resolved. Unlike most other hotels, the Kapalua Bay raised its room rates last summer but occupancy has

held up. At the same time, it started a policy of free golf for guests of the hotel, and play at both courses is up considerably. Condominium units in the rental pool at Kapalua have been merged into the hotel operation and are also handled by Regent International. Kapalua sponsored a tennis tournament with good success earlier in the year, but its big event was the Kapalua Open Golf Tournament in November, with a number of big-name pros in attendance.

The Maui Lu resort in Kihei is refurbishing its present facilities until it is able to finance a new plan of development for the hotel. The longhouse has been refurbished and renamed the Maui Lu Longhouse, with a broiler type of restaurant. The luau grounds have been doubled in size to accommodate a third night of dining per week. Now 700 persons can be accommodated at once. The hotel has removed 30 cottages from its inventory, and they probably will be demolished. It has 60 full-time employees, a number which doubles when special programs are scheduled.

Construction of the first phase of the Makena Surf started in October. Of the 16 acres to be developed on the beach at Makena, the first phase will cover six acres, with 86 units to be built in four separate three-story structures. These will be two- and three-bedroom units ranging in size from 1,300 to 2,300 square feet. Construction is scheduled to be completed late next year with prices for the units ranging from \$320,000 to \$700,000. The total project will be developed in three phases and will comprise 184 units.

SPACE RESEARCH

As man's activities beyond the earth expand, astronomy and space research become more important to the nation if it is to stay ahead in this race and protect its interests from unfriendly domination. But there are few excellent sites for space research, and two of them are in Hawaii. Mauna Kea on the Big Island has made great strides in astronomical research since its first telescope was constructed in 1969, but Haleakala on Maui has been the site of solar and space research since 1964. And with the growth of its research work it is making a significant contribution to the economy of Maui County.

The summit of Haleakala, like that of Mauna Kea, is owned by the State, and the 22.5-acre site dubbed "Science City" is leased out for space research work. The 10,000-foot elevation puts the site above the normal cloud level and the quality of the skies is considered excellent. Solar research, measurement of continental drift, satellite tracking, and other space research are the major kinds of work being done at Science City today. The University of Hawaii's Institute of Astronomy and the U.S. Air Force are the major tenants there. The Air Force, in turn, contracts with research firms to do its work there. About 157 persons are employed directly on Maui in connection with Science City, with an annual payroll of around \$4 million. Roughly another million dollars is spent annually for the purchase of materials and services.

Science City had its genesis in 1962 when the Institute of Astronomy was organized at the University of Hawaii, and the Mees Observatory was built on Haleakala for basic solar research. Ten years later the Institute built the LURE (Lunar Ranging Experiment) Observatory. This is one of several stations maintained by Goddard Space Center. By aiming a laser beam to the moon and bouncing it off a mirror left there by one of the Apollo Missions, or by aiming and bouncing it off a satellite station, continental drift and other phenomena on earth can be measured. Space research for the Air Force is contracted out to Avco Everett Research Laboratory, M.I.T. Lincoln Laboratories, and RCA Service Co. The Institute of Astronomy has from 20 to 25 persons stationed on Maui. Avco has a personnel roster of 97 on Maui, M.I.T. has five, and RCA has 30. All four have offices at lower elevations, and their personnel go up to Haleakala for actual space research or maintenance work. Avco has been on Maui for a while, but M.I.T. started its work for the Air Force last June, and RCA started operations

only in September. They conduct some very sophisticated research, and scientists and technicians come out regularly from the Mainland to spend a week or two at Haleakala.

RENEWABLE ENERGY

The prospect of postponing the construction of another oil-fired generator for Maui beyond 1990 now looks promising. Renewable energy from biomass and refuse is expected to produce sufficient capacity to push back the need for more oil-burning equipment. And Maui Electric Co. is hoping that geothermal energy can be developed on the island so that it may not need another new oil-fired generator in this century.

The new 20-megawatt capacity turbo-generator started up by HC&S Co. in early September has made it possible for the plantation to commit 12 megawatts of firm capacity to Maui Electric beginning in November. This plus the last generating unit installed by the utility at its Maalaea generating plant should be able to meet Maui power requirements to 1989.

Maui Electric is hopeful that the County plan to develop its energy-from-refuse project will bear fruit during this decade. The 15 proposals submitted by potential developers have been pared to four. The Mayor's committee has met with the finalists and visited prototype projects on the Mainland in its review of the proposals. If this energy-from-refuse project is approved for development, it would mean another five or six megawatts of capacity. And Maui Electric's plan for co-generation at its Maalaea plant by using the waste heat would provide another six megawatts of capacity. This 11 to 12 megawatts would buy another four or five years of time beyond 1989.

This would give potential developers time to see whether Maui has a geothermal resource that can be tapped. Four sites on Maui have been identified by the Hawaii Institute of Geophysics as potential reservoirs of geothermal energy. The one thought to have the best potential is the rift zone that runs from the summit of Haleakala down to La Perouse Bay in Makena. This is not only the youngest of the four rift zones but location is good as it is away from settled areas. There is a problem of multiple ownership of land but that probably could be resolved. Out of 40 inquiries sent by Maui Electric to potential developers, ten have replied and others have also responded, having heard about the project. Maui Electric is hoping that exploratory drilling can begin in 1983, and if there is a resource that can be tapped, the first geothermal power would be available by the end of this decade. The utility is asking potential developers for as much as 13 megawatts of capacity.

Maui County is looking at two hydroelectric generating units, one above Keanae and the other in Haliimaile. The one above Keanae would tap the East and West Wailua Iki streams. Much of the water now is being diverted to the East Maui Irrigation Ditch for irrigation and domestic uses. The penstock would be about a mile long and a 3.5 megawatt generator is being studied. The power could be used to supply the Keanae to Hana area. The County has asked the State for \$60,000 which it will match with \$25,000 for a feasibility study.

The other plan calls for a small unit that would take advantage of the pipe flow near Haliimaile to help reduce energy costs at the water treatment plant there. The potential savings would be around \$100,000 a year.

A new generating plant fueled by hay, wood chips, and waste-paper was opened by Molokai Electric Co. in May of this year on a 50-acre site two miles west of Kaunakakai. The first plant of its kind, the equipment had to be designed without the benefit of previous experience although the process is somewhat like that of the bagasse-fired generating plants at sugar plantations. The ash disposal unit broke down a few months after the plant was started when the shaft of the traveling grate was damaged. This closed down the plant for three weeks and the old plant was started up to fill Molokai's needs. In November the plant was put out of commis-

sion again when a bolt on the generator came loose and jammed the rotor. The generator is still under warranty, but repairs may take up to a year, and meanwhile the company is again using the old oil-fired diesel generators at the Kaunakakai plant.

Even without this disaster Molokai Electric was facing serious financial problems. Negotiations have been going on for several months to try to put the utility on a positive cash flow basis. Cost overruns in the construction of the plant and high costs in petitioning the Public Utilities Commission for rate changes have brought on a financial crisis. Because of the small user base, the system cannot support these unexpected extra charges. Therefore the debt has to be restructured to put the operation on a sound financial basis. One of several options would be a merger with Hawaiian Electric Co. where with a better bond rating, financing costs could be considerably lower.

AGRICULTURE

Maui County suffered a big decline in agricultural receipts in 1981, as did every other county. The reason was the huge loss sustained by the sugar industry caused by the big world surplus of the commodity which depressed prices of sugar way below the cost of production.

Total agricultural receipts for Maui County in 1981 amounted to \$115.3 million, down 27.6 percent from the record \$159.3 million achieved in 1980. The drop was accounted for entirely by sugar, with the value of unprocessed sugarcane tumbling 50 percent to \$50.6 million last year.

Pineapple showed a gain of close to 10 percent in receipts for harvested fruit last year. The best showing was contributed by diversified agriculture which reported receipts of \$24.8 million for a gain of 12.1 percent over 1980 receipts of \$22.1 million.

Livestock sales accounted for most of the gain in diversified agriculture with receipts increasing 15.1 percent to \$11.6 million. Diversified crops showed a gain of 9.7 percent last year to \$13.2 million based on substantial growth in vegetable and melon receipts and in field crops—~~forage~~ and seed corn. However, flowers and nursery products receipts declined 8.4 percent to \$4 million.

A 20.4 percent increase in vegetable and melon receipts last year to \$6.4 million was a new record for the county. This was made possible by substantial increases in production of a number of crops grown on Maui and Molokai. Accounting for three quarters of the increases were tomatoes, up 50.6 percent; dry onions, up 44.2 percent; and head lettuce, up 34.7 percent. Head cabbage, Maui's largest crop in this category, increased only 1.8 percent. Among the lesser crops, those with big increases in receipts were Italian squash, up 110.9 percent; watermelon, up 76.7 percent; green pepper, up 46.8 percent; celery, up 39.6 percent; Romaine lettuce, up 20.4 percent; cucumber, up 17.7 percent; sweet potato, up 8.2 percent; and snapbean, up 5.5 percent. Field crop receipts increased by 29.3 percent to \$2.3 million, aided by seed corn operations on Molokai and Maui, and hay and alfalfa production on Molokai.

The flower and nursery product category lost ground last year, as receipts dropped to \$4 million from \$4.3 million in 1980. The reason for the decline was a technical one—a large orchid farm sold off a substantial part of its inventory in 1980 resulting in an almost 50 percent increase in that subgroup in 1980, which in turn cut off sales in 1981 and reduced receipts of that subgroup by 38 percent last year.

Increased livestock sales were led by a 12.8 percent gain in sale of hogs by weight. An average price that was 1.5 cents per pound more than in 1980 produced a 15.1 percent increase in receipts to \$2.1 million in 1981. Cattle sales also showed a big gain for the county, but the gain was accounted for entirely by Molokai. Sales (live weight) by Maui ranchers were down 3.7 percent, although higher prices resulted in receipts of \$5.1 million, about the same as in 1980. But sales (live weight) by Molokai ranchers jumped by

109.3 percent. With prices averaging \$56.60 per hundred weight last year compared with \$48.70 in 1980, receipts totaled \$1.3 million, better than 140 percent more than in 1980. The gain by Molokai ranchers was accounted for entirely by feedlot-finished cattle, with sales of 1.8 million pounds compared to 413,000 pounds in 1980.

Molokai is getting a commercial aquaculture project, with Orca Seafarms starting a pilot project to see whether marine shrimp can be raised there. It has leased for 35 years a 157-acre site on the coastal flat makai of Molokai Electric Co.'s new generating plant. The company plans to raise the Mexican white shrimp in a 10-acre pond for a year. If the pilot program works out as anticipated, a 100-acre commercial farm will be built, with annual production up to 1.5 million pounds expected at full operation.

The 450-acre Kula Agricultural Park is expected to be completed around April 1983, at which time farmers may apply for the 31 lots ranging in size from 10 to 30 acres. Each applicant may be asked to submit a marketing plan so that the Ag Park Committee can select those with the best potential for success.

Sugar

The sugar industry on Maui suffered through a lean year in 1981, being hit by drought, the smut disease, and low prices. But it appears that 1982 will be a much improved year for the three plantations on the island.

Production in 1981 amounted to 254,374 tons, about a 4.5 percent decline from the 1980 crop of 266,251 tons. At a low 15 cents a pound, sugar revenues totaled only \$76.6 million, which was barely more than half of 1980 revenues of \$147.4 million. Molasses production was down also, and an average price that was about half of that in 1980 returned \$3.8 million, making total revenues from sugar and molasses of \$80.4 million, which was 48.3 percent less than 1980 revenues of \$155.4 million.

The 1982 crop is expected to be smaller yet than last year's because heavy rains early in the year slowed down harvesting, and at two of the plantations, layoffs were ordered to reduce costs. Affected the most is HC&S Co. which got a late start due to wet weather. Although harvesting weather was excellent during the second half of the year, HC&S's production probably will fall far short of the total planned harvest. This will mean that the plantation will have a tremendous crop to get in next year. With good weather and a good market, 1983 could be an excellent year for the plantation, but early indications are that prices will continue weak next year. Although wet weather impeded production, the trade-off for HC&S was an excellent water supply that was stretched out over the first half. Normally it has to pump a tremendous amount of water to keep its 34,000 acres of sugarcane adequately irrigated. But the good surface water supply reduced pumping requirements to a minimum, and the plantation was able to sell all of that power to Maui Electric Co. Power sales to the utility this year will add up to about 40 million kilowatt hours compared to 8 million kilowatt hours in 1981. A new turbo-generator at HC&S's Puunene mill came on line in early September. The bagasse-fired unit has a capacity of 20 megawatts, and it played an important role in increasing surplus power that was sold in the fall. HC&S is installing another low-head hydroelectric generating unit on its irrigation ditch system at Haliimaile. This unit will have a generating capacity of 500 kilowatts, and will come on stream around the end of this year. With all of its biomass and hydroelectric generating systems, HC&S will have around 50 megawatts of capacity, which in a wet year like this one could provide 20 percent or more of the utility's requirements for the island.

Wailuku Sugar Co.'s sugar crop is diminishing by the year as land is diverted to macadamia nut culture. Good weather last year resulted in good yields. From 2,043 acres harvested, Wailuku Sugar produced 24,650 tons of sugar, for a yield of 12.06 tons of sugar per acre harvested.

The plantation now has 1,454 acres planted in macadamia nuts.

It will plant another 188 acres with macadamia nut trees next year, and complete the project with 150 acres of plantings in 1984. The first plantings in 1979 on 395 acres will bear their first crop in 1984.

Wailuku Sugar diversified further this year by entering into a partnership to develop Hawaii Tropical Plantation, a 50-acre agricultural park at Waikapu aimed at the visitor market. The park will have groves of macadamia nut trees, guava, papaya, banana, star fruit, mango, passion fruit, pineapple, other tropical fruit, taro, and aquaculture projects. There will be a visitor center and a restaurant, and visitors will be taken around the park to see the plantation and its products. The park is patterned after the Sunshine Plantation in Australia developed by Mr. and Mrs. William Taylor, who will own 50 percent of the partnership. Wailuku Sugar will own 25 percent, and Pomare Ltd. the remaining 25 percent. Six acres of macadamia nut trees are already growing, and some of the guava acreage has been planted. Some produce from the plantation will be served in the restaurant, and some will be packaged for visitors to have shipped home. The project, to cost around \$3 million, is expected to be completed by the end of 1983, and opening to the public is planned for January 1984. Farmers will be allowed to market their produce at the plantation, and stalls for such sales will be made available. In addition to putting up the land, Wailuku Sugar will have a contract to maintain the park. When completed, the plantation will provide from 60 to 65 jobs.

Pioneer Mill Co. is making a good recovery this year after a 1981 that was beset with the smut disease problem. The disease, which stunts and kills the cane, caused a reduction of around 5,000 tons of sugar so the 1981 crop amounted to only 41,198 tons. The yield dropped to 9.99 tons of sugar per harvested acre. Over the past two years a new smut-resistant cane variety has been planted, and the yield this year will be around 12 tons of sugar per acre, a great improvement over last year. Drip-irrigated fields through September had yields of slightly over 13 tons of sugar per acre. The plantation has 750 acres more to convert to drip irrigation before the conversion project is complete, when 93 percent of the fields will be drip-irrigated.

Pioneer Mill has long been a water-short plantation, but not in 1982. Rainfall for August was 368 percent above average for the month. And for the first eight months of the year, rainfall was 86 percent above the average for the last ten years. With sufficient water for irrigation, the plantation is expecting a better yield next year.

The plantation is planning to improve its cane hauling system and the cleaning plant at the mill so that it will be able to get the crop off by the end of October or early November and increase the efficiency of the whole operation.

Pioneer Mill is studying the feasibility of using solar power to reduce use of fuel oil at its factory. Amfac Energy Inc., an Amfac subsidiary, was awarded a cooperative cost-sharing agreement by the Department of Energy to make preliminary engineering and cost analyses. The study will take a year to complete. Amfac is the prime contractor, with the subcontractors including Bechtel Group Inc.'s Research and Engineering Operations, Foster Wheeler Solar Development Corp., and ARCO Solar Industries Inc.

The proposed system will be made up of 558 heliostats or 32 feet by 32 feet of square mirrors which will track the sun and reflect and concentrate the sunlight on a receiver to produce steam which will drive electric generators and other equipment. The goal is to displace 44,000 barrels of oil annually or around 62 percent of Pioneer Mill's annual oil consumption. Electricity produced in excess of requirements will be sold to Maui Electric Co.

Amfac is also studying the feasibility of refurbishing Pioneer Mill's Kaula hydroelectric plant so that its output will be increased. The generator has a capacity of 350 kilowatts.

Pineapple

The state pineapple industry is going through a second year of

adversity due to a combination of a big world oversupply and the recession that has hit most of the industrialized nations. Maui County grows close to three-fourths of the state crop so it is affected by this decline, although most of the crop is processed in Honolulu. The current situation is similar to that of about a decade ago when a world oversupply depressed the industry severely. Several years of drought and the decision by Hawaii's major competitor at that time to drastically reduce its acreage corrected the demand-supply ratio and conditions improved rapidly. Now Thailand, which had not been an exporter until several years ago, has been adding to supply with its big production. The European market, which absorbed much of the production from Thailand, has been reducing consumption due to its growing recession, and world demand is wilting.

Maui Pine finds 1982 the low point in the past ten years of its operations. Its pre-tax profit will be down 30 percent from last year, but it is still profitable. The very wet weather this year delayed the harvest and cut production. Planting was also delayed, which could affect supply two years from now when the new fields mature. The company's private label business continues to grow, with the addition of another regional grocery chain to its list of customers.

To improve the efficiency of its cannery and to lower cost, Maui Pine has invested \$750,000 for a new core line that will handle tinplate in rolls instead of the traditional sheets. This will save inches from each sheet length of tinplate and result in substantial savings.

The company has also introduced new packaging for its pineapple juice that will lower production costs and consequently the retail price. It is the Brik Pak, a laminated paper carton that starts out as a roll of paper. The machine forms the package, and pineapple juice pours into the package and is sealed aseptically. The carton doesn't have to be refrigerated and will stay fresh for up to six months. This system was developed in Sweden and milk is being packed this way in Europe. The juice is packed with private labels for grocers throughout the state. For those outlets that do not have a private label, Maui Pine will use its own label, King of Hawaii, a name familiar to Islanders before World War II.

Castle & Cooke has been adversely affected by the depressed situation in the pineapple market. To cut costs, it decided early in the year to trim inventories by not harvesting the fruit on its Lanai plantation. It also announced that pineapple acreage on Lanai would be cut by 2,000 acres to 14,000 acres.

Del Monte Corp., which lost more than \$4 million in 1981 and expects bigger losses this year, will close its Molokai plantation in January 1983, laying off 220 plantation workers. The Molokai plantation produced pineapple for the Honolulu cannery, which will also close. Del Monte will continue marketing only fresh pineapple, which it raises on Oahu. This is a crushing blow to the Molokai economy, where the unemployment rate is already 13.1 percent with 500 persons out of work.

Del Monte had previously announced in 1973 that it would close its Molokai plantation in 1975, the same year that Dole stopped growing pineapple on Molokai, but when the market improved Del Monte managed to extend its Molokai operations for eight more years.

Viticulture

The culture of wine grapes at Ulupalakua, which started five years ago with the selection of the Carnelian strain after 140 varieties were tested, will have its first test before the end of the year. The first harvest of a ton of grapes in 1980 was made into sparkling wine, and the first stock will be ready by Christmas. Only a few cases will be available, but the quality of Maui's first commercially produced wine will help determine whether this could be an economically viable enterprise. However, the important test of public acceptance will have to be postponed for another year when much larger stocks of sparkling wine from the 1981 harvest will be

ready for market.

Except for the untimely rain, the vine culture at the Tedeschi Vineyards has been quite satisfactory. In 1981 the harvest was 22 tons or about two tons per acre. This year the forecast was for 45 to 50 tons of grapes, but heavy rain during the blooming period knocked off from a fourth to a third of the potential crop. Then rain just before the harvest season in midsummer threatened to wipe out the crop, but pickers were able to save most of it, and the crop amounted to 23 tons. Based on the condition of the vines, the harvest should be around 50 tons next year, if the weather is favorable.

The winery started operations with two tanks to make pineapple wine, which has built up a market demand and produced revenues, easing the negative cash flow. But with the grapes coming on well, four more tanks were installed last year, and another four were built this year. From the last two crops, the winery has the equivalent of 1,500 cases of sparkling wine aging with up to 500 cases ready for release by year-end 1983. It will be a light, dry, sparkling wine like a brut.

The market acceptance of this new product will determine whether Tedeschi Vineyards and Winery will expand its present 12 acres of grapes, and its processing and aging facilities.

Protea

The Hawaii Protea Cooperative, representing growers on Maui, is at a critical time of its existence, with production not growing fast enough, marketing continuing to be a difficult problem, and competition from other growing areas increasing.

Sales of flowers for the fiscal year ended last June 30 amounted to \$255,000, which was below the \$272,000 forecast because of

reduced acreage. The acreage for this fiscal year has been reduced further due to changes in the marketing agreement. Growers are now required to put up some capital and have a minimum number of plants. This forced backyard growers to give up their membership. (However, the cooperative buys flowers from nonmembers as well as members, though nonmembers don't have the same privileges as members.) The result was a loss of ten members down to 17. Due to the smaller membership, the cooperative is projecting sales of \$155,000 this year, a substantial decline from last year. The heavy rains this year also have adversely affected production.

The cooperative for the first time has an advertising budget this year totaling \$25,000 of which \$15,000 is from the Department of Planning and Economic Development. TV spots during the first five months when the flowers bloom most heavily attracted many visitors and local residents. The co-op also advertised in local travel magazines which helped retail sales. Magazine advertising was started up in October again with the start of the new blooming season.

Australia and South Africa, original homes of the protea, are making efforts to tap the Mainland market. Australia has test marketed its blooms in the Chicago and Milwaukee areas. Competition is also looming on the horizon from Israel. But Hawaii's main competitor is California, which has lower costs compared to Hawaii, and is closer to markets that Maui is cultivating. Hawaii's major markets for protea are Chicago, Detroit, New York, Atlanta, and Dallas.

Eventually, the cooperative feels it will need a facility on the West Coast to handle and distribute the flowers from Hawaii. Such a facility would cut down the amount of handling, and better control the temperature and light that the blooms are exposed to, thereby increasing the shelf life of the flowers.

Maui County Statistics

	unit	period	1977	1978	1979	1980	1981	9 mo.* 1982	% change 9 mo.* 1982/1981
Population, Resident	number	July 1	63,000	66,000	68,900	71,400	72,600	n.a.	—
Per Capita Personal Income	dollars	total	7,098	7,612	8,034	8,871	n.a.	n.a.	—
Civilian Labor Force	number	mo. avg.	32,150	33,100	34,100	37,250	38,850	40,550p	4.0
Employment	number	mo. avg.	29,800	30,650	32,000	35,250	36,550	37,550p	2.2
Unemployment	number	mo. avg.	2,350	2,450	2,100	2,000	2,300	3,000p	33.3
Unemployment Rate	percent	mo. avg.	7.4	7.5	6.2	5.3	5.9	7.3p	25.9
Total Job Count ¹	number	mo. avg.	28,450	30,950	32,650	34,600	35,200	36,450p	3.0
State Tax Collections ²	thous. \$	total	35,193	42,446	53,095	56,897	57,555	38,657	-12.3
Total Bank Deposits	thous. \$	end per.	180,722	216,241	247,224	266,241	282,019	312,757	13.6
Debits to Demand Deposits	mil. \$	total	1,736	2,246	2,787	3,077	2,955	2,295	2.4
Private Permits	thous. \$	total	74,768	168,923	146,443	253,690	147,813	37,250	-68.7
Residential	thous. \$	total	58,298	104,094	107,857	215,209	118,802	27,035	-72.6
Single Family	no. of units	total	1,081	994	1,010	803	398	373	-24.7
Multi-Family	no. of units	total	497	1,330	1,098	1,815	1,085	122	-87.9
Non-Residential	thous. \$	total	16,469	64,829	38,587	38,480	29,011	10,215	-49.8
Public Contracts Awarded	thous. \$	total	26,863	43,564	36,777	17,886	12,887	35,771	386.9
Federal	thous. \$	total	10,833	2,134	1,572	3,400	1,007	12	-92.6
State	thous. \$	total	7,239	25,242	28,420	13,181	7,364	17,026	192.4
County	thous. \$	total	8,792	16,187	6,785	1,305	4,515	18,733	1,272.5
Estimated Westbound Visitors	thous.	total	1,257	1,403	1,420	1,378	1,344	1,156p	12.4
Intended Length of Stay—Westbound	no. of days	mo. avg.	3.62	3.77	4.03	4.08	4.13	4.24p	2.2
Hotel Inventory	number	June	8,397	8,680	9,654	10,483	11,245	12,278	9.2
Hotel Occupancy	percent	mo. avg.	74.61	74.05	71.35	68.44	58.30	74.72	4.7
Electricity Generated	mil KWH	total	411	446	476	504	536	406	0.7
Telephones in Service	number	end per.	46,417	51,316	55,497	60,626	63,443	64,376	2.7
Motor Vehicle Registration	number	total	51,778	56,615	60,911	62,604	63,611	n.a.	—
Pineapple Production, fresh equivalent	thous. tons	total	454	488	491	479	466	n.a.	—
Sugar Production, raw sugar 96°	thous. tons	total	265	245	253	266	254	178	-18.8
Diversified Agriculture	thous. \$	total	17,522	19,527	22,328	22,098	24,780	n.a.	—
Crops	thous. \$	total	8,965	10,360	10,782	12,014	13,175	n.a.	—
Livestock	thous. \$	total	8,557	9,167	11,546	10,084	11,605	n.a.	—

p = preliminary

n.a. = not available

*except population (July 1), private permit data (8 mo.), and hotel inventory (June).

¹Refers to number of jobs rather than number of persons employed. Persons with more than one job are counted more than once.

²Excludes property taxes which were formerly collected by the State but are now collected by the County.